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RICK SIEGEL, vice president of IT operations at KeySpan Energy, has a Y2K command center — with links to government authorities — to coordinate the response to any power outages in January

FALSE ALARMS

IF THE ELECTRICITY goes out Jan. 1, is it a Y2K disaster or a run-of-the-mill power outage?

Who will know, when the phones start ringing off the hook? Already, a welfare payment

snafu in New Jersey — as well as flight delays in Chicago — have been falsely blamed on Y2K, write

Kathleen Ohlson and Thomas Hoffman. Y2K is becoming everybody's favorite scapegoat for anything that goes wrong.

Report is on page 25

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GOP EYES BOOST IN FOREIGN WORKERS

Congressional leaders want H-1B visa cap raised to 200K to ease IT labor shortage

BY PATRICK THIBODEAU
AND STEWART DECK
WASHINGTON

Citing a desperate need for more high-tech workers, Republican Party congressional leaders are pushing for a big hike in the H-1B visa cap.

Congress just raised the visa limit from 65,000 to 115,000 this year, but the cap was reached in May — six months before the end of the fiscal year.

Sen. Phil Gramm (R-Texas), a leading proponent for raising the cap, said high-tech companies in his state won't be able

to grow without more skilled workers. Senate Majority Leader Trent Lott (R-Miss.) is also backing the effort to raise the annual cap to 200,000.

They're seeking fast action on the proposal.

But the outlook for the cap increase isn't definite, with a congressional debate certain to pit organized labor supporters against companies in need of high-tech talent.

The H-1B visa is a tangled issue that cuts to the heart of some controversial labor problems. Industry proponents say the U.S. educational system isn't turning out enough skilled workers, but labor groups argue that many in the U.S. high-tech workforce don't get jobs because of their age and their salaries, which are higher than

foreign workers receive.

Employers are eager to see the visa ceiling raised.

Fairfax, Va.-based American Management Systems Inc. hires more than 800 people directly from colleges each year to fill its IT consultant jobs. "Each H-1B Visa, page 95

MERGER MARRIES 'OLD' ERP TO NEW

Dow, still on SAP R/2, trails Union Carbide

BY STACY COLLETT

The nation's second-largest chemical firm, Dow Chemical Co., may be the Goliath in its merger with No. 5 Union Carbide Corp. in a \$9 billion stock deal announced last week. But Danbury, Conn.-based Union Carbide has a leg up when it comes to enterprise resource planning (ERP) systems.

Union Carbide went live April 1 with a massive implementation. Merger and ERP, page 95

NEED A DESK? CALL THE BANK

Wells Fargo purchasing system to open to clients

BY CAROL SILVER

Wells Fargo & Co. will let up to 30,000 of its employees order supplies and equipment through their desktop browsers using its intranet-based procurement system.

But that's not all. The \$205 billion San Francisco-based financial services company also plans to extend that internal system to its business customers so that they, too, can buy computers, office supplies and other equipment they need through their browser. Wells Fargo, page 16

ONLINE STORES ADD OFF-LINE OUTLETS

Back-end system ties key to channel links

BY JULIA KING

A growing number of Internet retailers are looking to expand in a most unlikely place — off-line.

Take Gerald Stevens Inc. in Fort Lauderdale, Fla. The year-old floral and gift company operates three major online retail outlets. Yet it's also buying up real-world

stores at a rate of about one every other day. Last month, the company acquired 10 stores. This month, it's on target to buy another 50. It also takes phone and catalog orders.

"What we're trying to do on a simple basis is meet the customer wherever the customer wants to shop," said Gerald Stevens' CEO Steve Nevill.

So are a lot of other online retailers. What differentiates the hand-

Off-Line, page 95



STEVENS' Bob Schwartz: "Channel agents"



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Acknowledgements—The authors thank Dr. M. S. Gorman for his critical review of the manuscript.

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PORTAL PLEASE

Manager...
When Plaus...
get the...
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Page 75



GUESS WHERE?

At what company do IT folks include rubber chickens among their desk toys? Hint: It's in Springdale, Ark., and some IT staffers work in a converted grocery store. Page 56

COMPUTERWORLD THIS WEEK

AUGUST 9, 1999

NEWS

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- 9 **MANAGEMENT VENDORS** introduce training to help users master network and systems software.
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TECHNOLOGY

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- 60 **OPINION** **TECHNOLOGY FROM** Microsoft could make electronic books readable, reviews editor Russell Kay writes.
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- 69 **SUN DEVELOPS** architecture for a new Java chip for information appliances.
- 72 **NETWORKS** **LOPHIT'S** net security tool can detect monitoring by rogue insiders.
- 72 **NEW CISCO ADD-INS** make it easier to route voice traffic over IP networks.
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- 75 **EXEC TECH:** Web planners are too toylike to serve as your only PIM.
- 80 **FLASHBACK:** In 1980, RISC was being developed at both IBM and the University of California at Berkeley.
- 82 **SKILLS SCOPE:** Security pros are in high demand everywhere and are paid accordingly.

YOU CAN
CALL. I'LL
CONNECT
YOU WITH
SOMEONE
ELSE.

JIM ALLCHIN,
MICROSOFT'S WINDOWS 2000 CHIEF.
AFTER INSTALLING THE OPERATING
SYSTEM ON A COMPUTERWORLD
REPORTER'S LAPTOP
"I ASKED IF I COULD CALL IF I HAD
PROBLEMS," SHE SAID
SEE PAGE 60.

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AT DEADLINE

Deutsche Telekom To Buy U.K. Carrier

Confirming rumors of rumors, Deutsche Telekom AG agreed Friday to acquire U.K. mobile carrier One 2 One in a transaction worth \$3.6 billion. Regulatory review is expected to be completed next month. One 2 One is owned by Cable & Wireless PLC and U.S. cable operator MediaOne Group Inc.

AOL to Offer After-Hours Trading

Online investment bank WII Capital Corp. plans to give America Online Inc. customers access to after-hours stock trading later this year. New York-based WII Capital will pay AOL \$1 million to become the exclusive information provider to After Hours Center, a new section of AOL's personal finance channel to be launched in November.

IBM Responds To Allegations

An IBM spokesman said last week the company is cooperating fully with an inquiry from the U.S.'s tax authority, the Internal Revenue office, but declined to comment otherwise on reported allegations that it underpaid its taxes in the first half of the 1990s. The *Wall Street Journal* reported that IBM allegedly avoided paying up to \$500 million in U.S. taxes between 1990 and 1996.

Short Takes

CONGRESS extended the research and development tax credit for five years in the tax bill approved last week. This is the 10th time Congress has extended the credit since it was established in 1981. . . . THE HOUSE COMMERCE COMMITTEE approved two e-commerce bills: One would ensure public access to online business information, especially stock quotes. The other would let consumers use electronic signatures in online business deals. . . . PHILADELPHIA-based ROSENBERG INTERNATIONAL, the world's second-largest business-brand newspaper company, acquired online business travel site R3TRAVEL.COM for more than \$100 million.

Bank Seeks Rebound Through Internet Push

After missteps on big Corestates merger, First Union seeks consumer sales via Web

BY THOMAS HOFFMAN

AFTER stumbling through its biggest acquisition yet, First Union Corp. has set its sights on expanding its Internet presence for future growth.

In a three-hour meeting with Wall Street analysts last week, executives from the nation's sixth-largest bank acknowledged they bumbled the integration of Philadelphia-based Corestates Financial Corp. But unlike Wells Fargo & Co.'s missteps in consolidating multiple back-end systems in its 1996 merger with First Interstate Corp., First Union's problems in digesting Corestates were primarily branch-related, said analysts, who attended the briefing.

Charlotte, N.C.-based First Union "tried to do too much too fast," including trying to transition Corestates' branches while implementing a kiosked system at its own branches, said Ronald I. Mandile, an analyst at Sanford C. Bernstein & Co. in New York.

Under First Union's Future Bank initiative, customers who visit a branch are encouraged to use a telephone kiosk to have routine questions answered, so branch employees can focus on selling products.

But that approach bewildered some Corestates customers and led to higher-than-normal attrition rates, said Kate Blecher, an analyst at Brown Brothers Harriman & Co. in New York.

20% Attrition

In a typical bank deal, Blecher said, an acquiring bank loses 5% of its new customers in the first year. From April to November last year, First Union lost nearly 20% of the customers it picked up from Corestates, Blecher said.

John R. Georgiann, president of First Union, who was responsible for the Corestates integration, resigned from the

bank late last month. Calls to First Union weren't returned.

First Union has since worked through its integration issues. Its attrition rate is down to 0.5% and customer complaints have dropped 37% since their March peak, Blecher said. But the jury is still out as to whether First Union's expanded Internet strategy will work.

As part of that Internet strategy, First Union plans to provide a feature, beginning early next year, that would allow online customers to click a button and speak to a customer service representative. First

Union's Online customers would also be offered more attractive rates on loans and deposit accounts.

The revamped Web site, to debut Aug. 30, will include online trading, financial planning

JUST THE FACTS

First On The Net

Among the features First Union is adding to its expanded Internet presence:

- Option to buy more products online, such as mutual funds
- A button that visitors can click to speak with a customer service representative
- Lower rates for loans and deposit products for online customers

and other capabilities. The site will also place more focus on selling First Union products, such as mutual funds, rather than those from other companies. Mandile said.

But at a cost of 6 cents to 8 cents earnings per share, or \$11 million, the Internet project costs "are exceeding the efficiencies so far," Blecher said. ■

DaimlerChrysler Readies SAP R/3 Pilot

German sites in 2000, then global rollout

BY STEWART DECK

DaimlerChrysler AG will begin a pilot program with SAP AG's R/3 early next year, with an eye toward rolling out the enterprise applications to link each of its headquarters around the world.

The pilot program will start

in DaimlerChrysler's Stuttgart, Germany, world headquarters and then be rolled out gradually to six more corporate sites in Germany, said Sebastian Knoechelmann, a member of the SAP R/3 project team in Stuttgart.

After those sites are on board, the automaker will look to other sites, including its large Mercedes-Benz manufacturing plant in South Africa and its Chrysler headquarters in Auburn Hills, Mich., Knoechelmann added.

The company has already learned so much about implementing R/3 that it has begun creating a methodology road map to jump-start new implementations, Knoechelmann said.

It has some SAP financial applications installed in pockets of the organization, but most of its knowledge comes from studies of its own systems and preparation for

multisite implementations of a version tweaked for the auto industry, he said.

John Hagerty, an analyst at Boston-based AMR Research Inc., said a worldwide rollout of R/3 is typically a lengthy and complex process that takes quite a bit of special attention and a skilled team of implementors.

SWAT Team

"Companies usually put together a global SWAT team who travel from site to site and configure each system to the site's specifications," Hagerty said. "There have been plenty of global companies who've done this, but it is somewhat unusual among carmakers."

DaimlerChrysler is preparing just such a team of specialists, Knoechelmann said.

"Each site will have individual problems and requirements, but we hope our templates will cover 80% of those requirements so that we can scale them and install them easily to see the economic benefit," he said. ■

Corrections

A July 28 News story ("OTE in Standards on PC Docs Tools," page 10) misstated the cost of the Docs Open software from PC Docs Group International Inc. The story incorrectly stated the price is \$280,000 for 100 users. In fact, the price is \$38,000 for 100 users.

In the June 28 supplement, *Computerworld's* Best Places to Work in IT, the story "Surviving Up Hill Projects" (page 29) misspelled Mitch Carlsch's name. The story also misstated the number of desktops Altaba Insurance Co. is rolling out. It is 70,000.

A July 10 Business column on new books (page 50) misidentified where the authors of *The Clickable Corporation* work. It is Arthur Anderson, not Andersen Consulting.

The July 10 Technology feature ("The Year of the PC," page 84) misspelled the name of Tandy Corp.'s TWS-80 computer.

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Opal™
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Microsoft Tackles Win2K Installation Problems

Users' comments prompt more hardware and software support

BY SHARON GAUDIN

AFTER hearing concerns from beta testers, Microsoft Corp. has been working for the past several months to make it easier to install Windows 2000, from laptops to servers. Industry watchers say creating a smooth start-up will be a key factor in persuading corporate users to adopt the new operating system soon after its expected debut this fall.

"We got partway through the install and had to stop," said Todd Richert, a PC specialist at Baystate Health System in Springfield, Mass. "Windows 2000 doesn't support the latest client protocol from Novell.... If our users can't get to our Novell servers, that's a big standstill for us. What's the point?"

Microsoft officials said they



are listening. Craig Bellinson, a Windows 2000 product manager, said Microsoft is working closely with Novell Inc. and other vendors so that Win-

dows 2000 will support applications and protocols that users like Richert need.

Zeroing in on the ease-of-installation process, Bellinson said Microsoft developers have worked to progressively improve Windows 2000 test versions — Beta 2, April's Beta 3, this summer's Release Candidate 2, to support that effort, Bellinson said. Microsoft has done the following:

- Added support for more laptop brands and models. Beta 3 supports 120 laptop models, up from five in Beta 2.
- Added support for devices such as printers and scanners in Beta 3.
- Added support in Release Candidate 2 for 25 printer drivers and 40 wireless networking devices.
- Eased installation. Release Candidate 1 had a three-

mouse-click upgrade process from Windows 9x. Beta 3 had a three-mouse-click upgrade process from Windows NT 4.0 Workstation.

- Added a Server Configuration Wizard for Beta 3 designed to guide administrators based on what the server will be used for — file and print, a Web server or an application server.

Bellinson declined to say what installation improvements are in store for Release Candidate 2, expected out later this month.

The Windows 2000 operating system is expected to debut this fall, though Microsoft still hasn't given it an official ship date.

Mark Yates, site administrator at Point Claire, Quebec-based Merck Frost Canada Inc., a global pharmaceutical company, said he doesn't want a Windows 2000 installation to create more challenges than it solves. "Ease of installation will be one of the things we

consider, of course.... The simpler the installation, the better off I'm going to be," Yates said.

Brian McGuire, a vice president at Chicago-based Econometrics Inc., a database marketing firm, said the Windows 2000 installation process will have to be better than that of NT 4. "I tried to install NT 4 on my laptop and it didn't support my graphics card or the PC Card, so I quit."

But McGuire added, "If the Windows 2000 install is easier, we'll go straight there and just skip NT 4."

Congress Corks Online Liquor Sales

Bill could hurt smaller merchants

BY PATRICK THIBODEAU
WASHINGTON

The U.S. House last week voted to curb the interstate sale of alcoholic beverages, an action likely to hurt the e-commerce ventures of some smaller vineyards and retailers.

The House, following the Senate, approved a measure to give states the power to seek federal sanctions against retailers who skirt local and state alcohol sales restrictions. Such restrictions include those that prohibit direct sales to consumers and, in some cases, prohibit all out-of-state sales, especially in states with state-operated stores such as Utah.

Some Internet retailers have been selling directly to consumers and bypassing the local laws.

Large Internet retailers, such as Virtual Vineyards Inc. in Palo Alto, Calif., won't be affected by the proposed law, said the company's president and CEO, Bill Newlands. But it will raise the barrier of entry for some companies, he said.

The Wine and Spirits Wholesalers of America Inc. in Washington supports the legislation, according to spokesman Dave Dickerson. All the bills do is let states enforce their laws, he said. ■

Insurers Look for Niches in E-Commerce

Volume of activity belies lack of strategy

BY THOMAS HOFFMAN

Like companies in other industries, insurers are rushing headlong into e-commerce initiatives. The problem is, they have been "schizophrenic" about creating electronic business strategies to support those projects, according to a survey of 100 insurers released last week by Stamford, Conn.-based Meta Group Inc.

For example, while more than 90% of the survey respondents claimed to have an electronic business strategy already crafted or under development, more than 70% cited "lack of an e-business strategy" as one of their chief concerns. "Most insurers say they have a strategy, but in fact, most have scattered initiatives throughout

the organization," said Judy Johnson, a Meta Group analyst.

Although the insurance industry has long been considered a laggard in adopting new technologies, there doesn't appear to be a shortage of e-commerce projects under development. The industry "has woken up" to the e-commerce push in the past six months and is expected to launch a range of applications over the next 18 months, said Bob Hyman, head of the insurance industry practice at American Management Systems Inc. in Roseland, N.J.

The problem, Hyman said, is that insurance companies "are like kids in a candy store — they don't know where to start."

Johnson said successful in-

surers are focusing on creating online products or services in a particular niche, taking approaches like that of newcomer InsWeb Corp., which offers automobile insurance quotes from several carriers to would-be customers at its Web site (www.insweb.com).

The Progressive Corp. (www.progressive.com) takes a slightly different approach. The Cleveland-based company allows each potential customer to get an auto insurance quote online and compare it with quotes from three insurance companies from the visitor's state, said Glenn Kenwick, Progressive's CIO.

Meanwhile, United States Automobile Association (USAA) in San Antonio is using a rules-based system that "listens" to conversations between customer service representatives and customers and

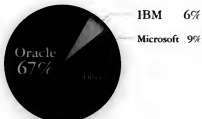


CD OLSEN NETWORK says Progressive's Web site lets visitors compare auto insurance quotes with those of three leading carriers in their home states

offers "suggestions" for representatives to ask, such as "Do you have insurance on your personal computer?" USAA is working on developing an Internet connection that would allow customers to handle some self-service online, said Bob Ingram, senior vice president of customer relationship management. ■

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NEWS

BRIEFS

Bill Filed to Tax Internet Goods

The three-year moratorium on new Internet taxes may end prematurely if a bill before the Senate Finance Committee passes, levying a 5% sales tax on goods sold via the Internet and holdings, introduced by Sen. Fritz Hollings (D-S.C.), the proceeds would fund "border" activities in elementary and secondary schools, a spokesman for Hollings said.

Futures Markets Link

The Chicago Mercantile Exchange (CME) and the London International Financial Futures and Options Exchange (LIFFE) are connecting their electronic trading systems to give customers access to each other's products. The move, aimed at cutting traders' costs and making options more efficient, will begin early next year. U.S. traders who only use the "open outcry" method have resisted electronic bids between exchanges. But alliances—such as a partnership between LIFFE's German competitor, Euron, and CME's rival, the Chicago Board of Trade—have changed the landscape.

Survey Finds E-Mail Carries Half of Viruses

Over half the viruses that infected computers this year came via e-mail, according to a survey of 200 organizations by International Computer Security Association. The annual survey noted that virus outbreaks reached a high of 60 incidents per month for every 1,000 computers in February, up from 32 per month last year.

Security Hole Found in Microsoft Office 97

A security hole in Microsoft Corp.'s Office 97 suite could allow an attacker to plant viruses, delete data or read files. The flaw, found in Microsoft's Jet Version 3.51 data access software in Office 97, could allow malicious code to be lodged in an Excel 97 worksheet or delivered in Web pages or e-mail. Upgrading to Jet 4.0 solves the problem.

Vendors Flesh Out Details On Linux Plans, Support

Oracle, IBM, Sybase among those now going beyond just porting their software

BY DAVID ORIENTHEIN

THIS WEEK at the Linux World Expo in San Jose, many vendors that once offered only betas of their software ported to Linux with little or no technical support will line up to provide concrete information about their products.

Oracle Corp. said it will announce a business unit dedicated to developing and supporting products on Linux, and a Linux version of its browser-based WebDB data reporting tool is available for download. Its Developer programming tools for Linux will also debut this fall. Support for Extensible Markup Language on Linux, with tools such as parsers, will be available next week.

Sybase Inc. in Emeryville, Calif., said it will offer technical support for Linux versions of its Adaptive Server Enterprise, Replication Server and SQL Anywhere. Enterprise Application Server will be available on Linux in September, and Replication Server is due at the beginning of next year. SQL Anywhere was released for Linux last month.

Vendors have seen real demand for products that run on Linux and are continuing to pour hardware and software into the Linux market. IBM plans include a new entry-level Netfinity server with 90 days free support for any of the four major Linux distributions. IBM

will also announce that it's helping port SAP AG's R/3 to Linux and that Hill House Hammond, a British insurer, is buying 200 Netfinity servers to run Linux-based applications.

Silicon Graphics Inc. in Mountain View, Calif., last week unveiled a new Linux

server and a partnership with Red Hat Software Inc. in Research Triangle Park, N.C., to ship its Linux version on Intel Corp.-based SGI servers.

Linux distributor TurboLinux Inc. in Millbrae, Calif., will announce a high-availability clustering technology for Linux and Version 4.0 of its Linux distribution for corporate servers.

In addition, Motorola Inc. in Schaumburg, Ill., in conjunction with Caldera Systems Inc.

in Orem, Utah, will announce a Linux high-availability technology for its niche market of telecommunications companies. Motorola will also announce a Linux server appliance for Web hosting and embedded Linux products.

For mainstream desktop users, Corel Corp. in Ottawa, will unveil a distribution of the operating system, with a strong emphasis on ease of use and installation. ■

Burlington Coat Factory Finds That Linux Runs Smoothly, Despite Lack of Support

In February, Burlington Coat Factory Warehouse Inc. became one of the largest companies to convert to a rollout of more than 1,000 Linux PCs and servers (News, Feb. 16). The systems will give workers access to a variety of internet and host-based applications as well as desktop productivity applications.

CIO Mike Prince, a keynote speaker at this week's Linux World Conference & Expo in San Jose, told Computerworld writer David Owenstein on Aug. 2 that Linux has performed very well so far but has been hindered by inconsistent support from application vendors.

Q: How is the rollout going?

A: The first thing we did... we were opening up a new distribution center... and we needed to deploy about 80 desktops there, and we deployed Linux. It exceeded our expectations. It has been running operationally to me that we put Linux over there.

As we've been opening stores all spring and summer, we've been deploying Linux. That's gone well.

...I don't know of any glitches. A total of 1,250 machines are going to get shipped [by older stores], probably while we are out in Linux World. Our experience in at least a dozen [new] stores is it has done everything we expected.

There are a few things that have come and gone as problems. We [use] Intel Corp. handheld devices at all the stores. We wanted them to port [their new technology] to Linux, and they weren't willing to do that without us handing the port for a stable number. But with the grassroots of the popularity of Linux, they have done the port.

Another thing is that, right now, we run time and attendance applications from a firm called Stripes Time Recorder Co. Stripes currently supports a Unix version and a Windows NT version and has basically developed an NT-only stance. We are not sure what they are going to do for next-generation time and attendance [software]. Linux has indeed been an obstacle there.

Q: Do you have a sense about whether running a Linux PC will cost less than other operating systems?

A: Yes. Everybody involved with the project so far feels like in every way that for lower support requirements and stability, Linux has met its objectives. It's about as stable and reliable and easy to support as we think any operating system could be.

Q: What are the issues still pending for Linux?

A: The whole strategy of deploying Linux as a platform for Web-based applications depends on a viable browser for Linux. This whole stagnation of the Mozilla effort [by America Online Inc.'s Netscape Communications Corp., said to develop an open source Web browser] and AOL's conflicting interest in what it wants to do with the browser, and Sun is now engineering interest in shipping in. That has to resolve itself satisfactorily or else this will start to look less like the right thing. ■

Burlington CIO Mike Prince says Linux exceeded expectations

IBM, I2 Plan Integration of Tools, Services

BY STEWART DECK

IBM and I2 Technologies Inc. last week announced a partnership to provide supply-chain planning customers with integrated tools and services.

IBM will chiefly provide research and consulting services

for the installation of applications from Irving, Texas-based I2 Technologies—the largest supply-chain planning applications vendor.

Previously, customers could purchase I2 applications and IBM services separately. The

partnership will mean faster implementations from IBM, whose technicians will be trained to customize I2 applications, said John Wilson, director of business development at IBM's supply-chain management division.

Indianapolis-based Delta Faucet Co. successfully used the consulting and integration services offered by IBM to install I2's supply-chain applications, according to Steve McFarland, the company's chief financial officer. McFarland made an appearance at the event staged to announce the partnership between the two companies. ■

BMC, CA Offer Help in Taming Their Tools

BY SAM LAIS
SANTA CLARA, CALIF.

The din of complaints from information technology managers struggling to run enterprise management software has apparently reached the ears of vendors.

Two major systems management vendors are rolling out service and education programs aimed at helping IT managers get the most out of the software used to manage their systems and networks.

"We studied what users were doing with the software and found they were only using 40% of its capabilities," said J. A. "Chip" Nemess, vice president of BMC Software Inc.'s new Professional Services Division.

Today's announcement from the Houston-based company comes less than three weeks after Computer Associates International Inc. announced it reorganized and enlarged Global Professional Services "because implementations of core products were failing," said Jim Holt, senior vice president of marketing at the division.

Different Strategies

The vendors are "pursuing very different strategies and working under very different constraints," said Will Cappelli, a vice president at Giga Information Group Inc. in London.

BMC is "focusing on solving specific problems" that rely on use of BMC's strongest products, including those acquired in the past year with the purchase of Boole & Babbage Inc. and New Dimension Software Inc., Nemess said.

But to make all the pieces of its "still incompletely organized" portfolio work together in an enterprise, BMC may have to adopt a more systems integrator kind of role, Cappelli said.

Programs like HealthCheck, in which BMC returns to users a year or so after their purchase to help retune software and retrain staff, could be just what the IT director ordered.

In the six years since his agency began rolling out Hewlett-Packard Co.'s OpenView, much has changed, said user at the U.S. Department of Defense. "I know there are things it could do automati-

cally that could free up a systems administrator if it were set up right," he said.

For example, if configured

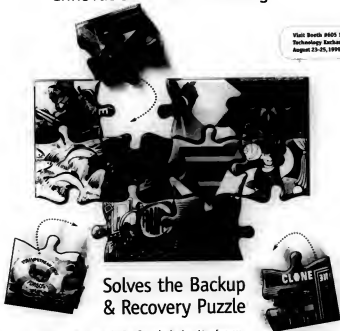
properly, OpenView could automatically fix server problems instead of notifying an IT staff member who must drill

down on his console to find who's responsible for the server, contact that person and then monitor the console to see when the problem was fixed.

Skills transfer is high on CA's

to-do list, as well. The Islandia, N.Y., company is expanding its educational services with on-line learning via an agreement to market the Virtual Learning Network from Anderson Consulting in Chicago. ▀

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Online Growth Prompts Schwab to Build Training Intranet

BY DOMINIQUE DECKMANN

To cope with rapid growth and a transition to being an online brokerage, Charles Schwab &

Co. said last week that it is creating an intranet for delivering training to 13,000 employees. When the Schwab Learning

Intranet goes live in the fourth quarter, every employee will be able to access a Web page with a personalized curricu-

lum of both online and classroom training, based on his role in the company and his individual training history. The

online courses will be accessed directly from the Web page, while the training intranet will also let users enroll for classroom training and obtain printed materials for courses.

Patrick MacKellan, director of educational technology at Schwab, said the company wanted a browser-based system that would handle enrollment, scheduling and logistics for all types of training. A desktop client would have slowed deployment by almost three months, he said.

For the backbone of its Learning Intranet, the company considered products such as San Francisco-based Macromedia Inc.'s Pathways, which has since been acquired by Lotus Development Corp., but chose Teamscape Learning Portal 2.5 from Burlingame, Calif.-based Teamscape Corp. Pricing for the software, which runs on Windows NT or Solaris, starts at about \$150,000 for 2,000 users.

Schwab declined to disclose project costs, but Teamscape acknowledged that pricing was "in the seven-figure range."

The project demands considerable customization, including the integration of a homegrown Web-based application for multiple-choice tests. To develop courses, the company is using various authoring packages, including Dreamweaver from Macromedia. Schwab also has plans to link one or more virtual classroom tools, such as Mountain View, Calif.-based PlaceWare Inc.'s Conference Center.

Learning portals make sense, said Elliot Masie, president of The Masie Center Inc., a Saratoga Springs, N.Y.-based research firm. "Teamscape is really focusing on the personalized learning environment, and that's a great move," he said. ▀



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JUST THE FACTS

Keeping Up

Highlights of Schwab's growth, and how it's handling training:

- Added more than 3,000 employees in 18 months
- Conducted 67% of its trades online in the second quarter
- Has 56,000 to 70,000 training enrollments per year
- Offered 1,450 classes and more than 600 courses
- Provides SEC-mandated training



The horizon widens


GREAT PLAINS

Congress Takes Aim At Information Security

Considering 'czar' to monitor government and industries in post-year-2000 world

BY PATRICK THIBODEAU

IN CONGRESS, the year 2000 problem is rapidly morphing into an information security problem. In the past two weeks, the House and Senate have each held hearings examining Y2K's potential for exposing systems to theft and fraud.

U.S. Rep. Constance Morella (R-Md.) and Sen. Robert Bennett (R-Utah), two congressional leaders on Y2K, have each suggested the possibility of creating an information security "czar" to focus government and private industry attention on security problems. In yet another sign of congressional interest, the Senate's special Y2K committee, set to expire next year, may live on as an information security committee.

Lawmakers' intense interest in information security and privacy could lead to legislation affecting the private sector — as it already has in the health care field.

In December, the U.S. De-

partment of Health and Human Services is expected to release a broad list of security rules — mandated by congressional legislation — intended to protect patient records. The rules will set standards for encryption, the use of digital signatures, data storage, audit trails and physical security, among other things.

"We never seen this com-

prehensive a standard required of any other industry for security," said William Misonulis, information security officer at the University of Alabama Hospital, an 850-bed, 5,000-employee facility in Birmingham. Meeting the federal requirements, which he nonetheless called "realistic," will be as big a job as repairing the Y2K problem, he said.

But if Congress wants a larger security role, Misonulis said, it should prod federal officials to improve enforcement. "They need to provide the abil-

ity to more easily identify the source of hacking attempts," he said.

Last week's House subcommittee hearing was prompted by a recent headline-grabbing study by Stamford, Conn.-based Gartner Group Inc., which predicted Y2K work might open the door to a spectacular \$1 billion theft.

The report drew skepticism from some members.

"This is a serious assertion that raises more questions than it answers," said Rep. Mark Udall (D-Colo.), who

JUST THE FACTS

Shifting Gears

Congress is shifting its focus from year 2000 to information security

Why the Worry? Privacy legislation could force companies to meet certain federal security guidelines; health care is facing a comprehensive set of security rules

What's on the Way? Congress may push for an information security "czar" and create a permanent committee to focus attention on security

warned that such claims "could undermine public trust" in our financial system.

Gartner analyst Joseph Pucclarelli said the prediction was reviewed by 200 of the company's clients, many of whom felt "the risk of theft was even higher than I had proposed."

Year 2000 Sabotage Worries Officials

After federal officials warned that year 2000 programmers could covertly introduce malicious code or install trojans, security experts last week urged organizations to scan their networks for sabotage before Jan. 1.

Jada Africa, information security practice manager at Applied Vision in Norlport, N.Y., recommended that companies conduct repeated vulnerability scans before and after Jan. 1 to establish whether potential problems are the result of Y2K glitches or security breaches.

"I do not understand what your

vulnerabilities are prior to the turn of the century, you may be fooled. You may not have a Y2K problem at all; you may have been hacked," D'Ancosa said. "If you have a sense of what your vulnerabilities are and start plugging them, you have a shot at isolating your problem."

In testimony before the U.S. Senate Committee on the Year 2000 Technology Problem, Michael Veltz, director of the FBI's National Infrastructure Protection Center, said the potential for damage was enhanced by the number of overseas programmers hired for year 2000 remediation.

He said the situation was a unique opportunity for foreign countries and companies to access, steal or disrupt sensitive information systems.

Veltz urged companies to do background checks on the companies hired for Y2K repairs.

"Many of these people have no security clearance, do not work for the government, and yet they have access to critical systems that, if sabotaged, could wreak havoc to our financial institutions and our economy," said Sen. Christopher Dodd (D-Conn.), the committee's vice chairman.

D'Ancosa, an information warfare expert who formerly worked at

Northrop Grumman Corp. in Los Angeles, predicted an increase in security breaches around Jan. 1 as intruders who will use possible confusion about Y2K glitches as cover for their activities.

Vendors of commercial network scanning and intrusion detection systems said effective monitoring is possible.

But Richard Schaeffer, director of the U.S. Department of Defense's Infrastructure and Information Assurance program, was less pessimistic.

"While systems have been and continue to be thoroughly tested, the probability of finding malicious code is extremely small," Schaeffer testified. — Ann Hanson

Companies Can Monitor Attack Data Now

Detection network plan questioned

BY ANN HANSSON

While Clinton administration attorneys continue to evaluate the privacy implications of the proposed Federal Intrusion Detection Network (FIDNET), security managers said last week that existing technology can scan for malicious activity without compromising privacy.

"It depends on the implementation. Once you have that technology in place, it doesn't take a lot to get the next step [of covert monitoring]. There

needs to be some checks and balances in place to make sure that it's being used for its intended purposes," said Howard Schmidt, president of Oak Creek, Wis.-based Information Systems Security Association, which represents L700 security managers.

FIDNET would monitor patterns of suspicious behavior on civilian-agency and, eventually, private-sector networks. Attack data would be exchanged among government agencies and businesses.

The feds should concentrate on installing firewalls and security measures, said Marcus Rayburn, president and CEO of

Network Flight Recorder Inc. in Woodbine, Md., which sells intrusion detection systems.

He said attack patterns such as signatures in SMTP transactions could be monitored without violating privacy. Existing

tools look for the presence of the Melissa virus in e-mail attachments, for example, without scanning the content for keywords, Rayburn said.

David Remnitz, founder of the New York-based security consulting firm iSec, said he supports FIDNET but cautioned that the massive network surveillance system won't

be easy to implement. Remnitz said it may be vulnerable to false positives, unable to scale up to nationwide proportions and have difficulty evaluating corporate systems with unique configurations.

Remnitz also noted that concern about covert monitoring may increase distrust among businesses already hesitant to report computer crimes.

If FIDNET is used to scan e-mail contents or other data, it would spark resistance, Remnitz said. "What we will find if we go to an environment like this is that more people will use encryption as a standard, as opposed to a preventative, option," he said. But Rayburn said applications can scan for attack patterns whether the data is encrypted or not. ■

- NetRanger from Cisco Systems Inc., www.cisco.com
- NFR Intrusion Detection Appliance from Network Flight Recorder Inc., www.nfr.net
- SecureDetect from ODS Networks Inc., www.ods.com
- RealSecure from Internet Security Systems Inc., www.isa.net
- eSP from e-Security, www.esecurityinc.com

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at**

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put them on the Web by**

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BRIEFS

Crack This Microsoft Computer, Please

Microsoft Corp. is asking people to try to break into a computer running the beta version of its Windows 2000 operating system that it has connected to the Internet. Some goals: Make it interesting, compromise an account, change something you shouldn't have access to or get something you shouldn't have.

The Microsoft Windows 2000 Internet Test Site can be found at www.windows2000test.com.

AOL Bait MSN Messenger Users

America Online Inc. is experimenting with a new approach in its ongoing spat with Microsoft over instant Messaging. For weeks, it has been luring users of Microsoft's competing MSN Messenger from connecting to AOL's instant Messaging service. Now, users can connect initially but will receive an instant message from AOL, prompting them to switch software. Then, they're disconnected.

Short Takes

ALLBOOKSLESS INC. in Hagerstown, N.Y., has signed a five-year software deal under which Allbooks, Met-based INTERNETWORKING INC. will build, deploy and manage the bookstore's new online retail Web site. The site is scheduled to be operational by November. ... COMPAQ COMPUTER CORP. last week said it had fired Division, a former IBM executive who worked most recently at BMC Software Inc., as vice president of e-commerce. ... Ford Motor Co. CEO Bob Finkelstein has become CEO at Milpitas, Calif.-based electronic and manufacturing services firm SELECTION CORP. ... TIME WARNER INC. has hired Dell Computer Corp. executive Michael Dean as its chief technology officer. Dean had managed Dell's online web. ... EASTMAN KODAK CO. has promoted its vice president of Business Japan Division to its senior vice president of business strategy and IT, a newly created position. ... Remco Inc. CEO David Douglas has named CEO of REMANUFACTURING WORLDWIDE INC., a consulting firm based in Houston, Texas.

UUnet to Build, Expand Data Centers for \$100M

Rising demand for Web hosting prompts move

BY BOB WALLACE

MOUNTING user demand for a variety of Web-hosting services has driven UUnet Technologies Inc. to earmark more than \$100 million to build seven new U.S. data centers and expand existing ones, the company announced last week.

The Fairfax, Va.-based Internet backbone giant, which has been offering Web hosting for five years, hopes to have the project finished in about nine months. The MCI WorldCom Inc. unit already has eight data centers, including five in Europe.

UUnet will spend its money building the new centers and equipping them with items such as load balancers, servers, monitoring systems, tape back-

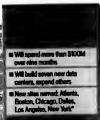
up packages, power equipment and security systems.

One expert expects user interest in Web hosting to skyrocket.

"As the business value of what companies do on the Internet increases, hosting a server in your own closet doesn't make much sense compared to the infrastructure, facilities, redundancy and support that service providers like UUnet can provide," said Jillian Zerbi, an analyst at Current Analysis Inc., a Sterling, Va., consultancy.

The Great Web Rush

Zerbi said UUnet's expansion plans — and those of other top Internet service providers and carriers — are being driven by the growing need to support mission-critical applications, rather than



simple informational Web sites.

The Web-hosting market will soar to \$14.6 billion by 2003, according to Forrester Research Inc. in Cambridge, Mass. UUnet claims it already has 1,700 hosting customers worldwide. Its far-flung data centers are connected to the company's OC-48 Internet backbone.

One UUnet customer spoke highly of the company's plans to invest so much in Web-

hosting expansion.

"This \$100 million project illustrates UUnet's commitment to electronic commerce and why we chose them — because they're a premier, global [service provider] with big plans," said Rich Haddad, marketing director at TALPA Inc., a Chicago-based start-up. Haddad worked closely with UUnet to develop and host a site that serves as an exchange for member businesses to buy and sell lumber.

"The [package] is hosted at one UUnet site. But in the future, for redundancy and reliability purposes, we'd want to have it at one or more other data centers, so that losing one site wouldn't put us out of business," he said.

The Web-hosting business has even attracted companies without networks and data centers, most notably Intel Corp., which earlier this year outlined plans to build and link data centers in the U.S. ▀

San Francisco Manages \$45M Project via Web-Based Service

Software is tailored to building industry

BY DOMINIQUE DECKMANN

To get crowds to the new Pacific Bell Park baseball stadium in San Francisco, the city is building a road, rail and pedestrian connection. To coordinate the \$45 million construction project, the city is using a Web-based project management service called In-Site from San Francisco-based BidCom Inc.

The connection will run 0.85 miles along the waterfront, from the city's famed ferry building to the new ballpark, which is set to open next April.

The In-Site software is built around a document repository and a workflow engine. It handles building projects from early planning to construction.

The city of San Francisco is using it to coordinate the work of 130 people involved in the project. That includes about 20 inspectors who use a JCom Corp. Palm IIIx at the building site. The data they enter on their handheld systems is synchronized with the main project Web site, using Oracle Corp.'s OracleiS Lite software.

Minding Your Own Business

BidCom doesn't sell its software; it rents a hosted version for \$50 per user, per month. That model appealed to Harlan Kelly, city engineer and deputy director of engineering at the department of public works for the city and county of San Francisco. "We're not in the business of doing workflow and Internet software," Harlan said.

He said it's the first time the



AN INSPECTOR AT THE CONSTRUCTION SITE enters data on his Palm III, which is synchronized with the main project Web site

city has used software to coordinate such a project, and that it has dramatically increased the speed at which information is disseminated across the project team.

Clare Gillan, an analyst at International Data Corp. in Framingham, Mass., said this kind of highly specialized outsourcing service is innovative and likely to become increas-

ingly popular. By delivering a service that's highly tailored to the building industry and adding features such as integration with handheld devices, BidCom is using the application service provider business model in a novel and highly effective way, Gillan said.

"It takes them out of competition with traditional project management tools," she said. ▀

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Continued from page 1

Wells Fargo Purchasing System

sen, a company executive said. Wells Fargo is not alone.

Another major financial services company next month will announce plans to set up a similar online marketplace with software from Trax Technologies Inc. in Tampa, Fla., a Traxer spokeswoman said. Four other financial services companies also have expressed interest in setting up sites where their business customers can purchase goods and services, company spokeswoman Gretta Bruce said.

"It makes sense for an organization like a Wells Fargo or a

credit-card company to host this activity. It's a value-added service to generate more use of their core business, managing the finance end of [their customers'] business transactions," said Tim Minahan, an analyst at Boston-based Aberdeen Group Inc.

Yet the procurement hosting trend won't be limited to financial companies, analysts predicted. Raytheon Co. in Lexington, Mass., for instance, also hopes to extend its Traxer internal procurement system to its customers, a Traxer spokeswoman said.

"If the trading partner is buying the same types of goods and services that the hub company is, this kind of service can work really well," said Erica Ruggelles, an analyst at Giga Information Group Inc. in Cambridge, Mass. "It can improve their relationships with trading partners and result in loyalty."

Companies that elect to extend their procurement systems to small and midsize business customers can spare them the expense and burden of setting up and maintaining an intranet-based online procurement system yet allow them to reap similar benefits, such as better negotiated rates with suppliers, control over employees' rogue purchases and reduced paperwork.

Though procurement software can bring companies huge savings relatively quickly, it has been slow to gain a foothold in corporations because of the expense, complex-

Hub sites set up by companies that want to leverage their buying volume, extending their procurement systems to customers and business partners.

Vertical market portals set up by third-party companies

ity and companywide effort necessary to set up such a system. Aberdeen interviewed 30 early-adopter companies last November and found that they had spent an average of \$1.4 million on license, implementation and first-year maintenance fees.

Wells Fargo, which expects to have a dozen supplier catalogs on its internal system by the end of next month, has yet to determine the launch date of the procurement offering for its business customers.

"What we're trying to do is offer customers one more reason to do business with us and make it easier for them to conduct business on the Internet," said Matthew Graves, a Wells Fargo senior vice president.

Wells Fargo plans to use its RightWorks Corp. package, which has new books that help set up multiple workflow systems and separate profiles for each organization and its various departments. But analysts said other companies, including Ariba Inc., Clarus Corp. and Commerce One Inc., are also moving in that direction, putting new features into their procurement packages to help companies extend their internal procurement systems to partners and customers. ■

FedEx to Buy Supplies via Net

When Federal Express Corp. completes the international rollout of its intranet-based procurement system in six months, it could be one of the largest e-procurement sites in the world.

At \$65,000, FedEx's U.S.-based employees and 30,000 international staffers will have access to the system, although the company doesn't expect to have more than 15,000 users per day, said Tony Riddiwe, vice president of global supply chain integration. "We could have learned on the whole company at once, but that's a bit of a communications nightmare," Riddiwe said.

Although FedEx is following the example of large companies that have set up intranet systems, it has no plans to host supplier catalogs in the long run, as many early adopters have done. It plans to access catalogs on the hub set up by its software vendor, Ariba Inc. in Sunnyvale, Calif. Suppliers can register their products and communications protocols on the hub.

"The major barriers we realized in our early adopter market were content management and systems-to-system integration," said Tim Minahan, an analyst at Boston-based Aberdeen Group Inc., noting that companies that set up for the Ariba platform at Midwest Credit, Calif.-based Commerce One Inc.'s Market-Site can eliminate content management issues. — Carol Stein

EMC Opens Up APIs for Storage Software

But software vendors will pay for access

BY STACY COLLETT

In a push to extend the list of software compatible with its Symmetrix enterprise storage systems, EMC Corp. is providing access to more of its application programming interfaces (API) to any software vendor that wants it — for a price.

Until now, the Hopkinton, Mass., storage system developer has handicapped its development partners and limited the APIs it makes available.

The E-Infrastructure Developers Program offers access to new APIs for management, control and socket functions and includes technical training, API software development kits and access to EMC's engineering facilities.

Any licensed software ven-

Tools Tackle Service-Level Agreements

CA and Tivoli show wares at summit

BY SAM LAIS
SANTA CLARA, CALIF.

Let CEOs take the 30,000-ft. view. Network and systems administrators were at the Enterprise Management Summit here last week looking for answers to problems underfoot.

New products from Computer Associates International Inc. and Tivoli Systems Inc. target two of those problems — tuning hardware and software to meet service-level agreements.

Tivoli is shipping its Server Performance Prediction software, which it claims can help ensure optimal performance among servers, without requiring time-consuming modeling or analysis.

Used with Tivoli's Decision Support application, the software combines existing Tivoli Inventory and Distributed Monitoring data. Users can tap into the data to predict capacity and performance trends, project server performance bottlenecks and avoid potential problems, the company said. The \$10,000 tool is the latest in the Decision Support Guide series from the Austin, Texas, company.

CA's entry, ManageIT, is still

in beta but is scheduled to ship by year's end. A database application management suite of tools, it's the latest result of CA's integration of its tools with software assets it acquired with its purchase of Platinum.

ManageIT's enterprise application and database management products work alone and with CA's Unicenter TNG framework to optimize, monitor and predict performance of more than 30 database, groupware, e-mail and enterprise resource planning applications.

The tool analyzes underlying application source code and suggests ways to write or tune SQL applications. Knowledge Agents supply data to ManageIT's rules-based inference engine, experience-based reasoning component and Neugents, CA's name for its implementation of neural net technology.

CA also announced it will offer its Aint2 Y2K tool free through Jan. 31. A CD-ROM of the application is available at www.ca.com. The tool includes Electronic Data Systems Corp.'s Vendor 2000 database of 250,000 items and about 7,000 software packages. Aint2 creates a hardware and software inventory, meters and audits software use and offers central administration of desktop configurations. ■

"IBM has made it very clear that they intend to open up the intelligent controller to third-party software developers to try and deliver value to the marketplace," said Colin Rankine, an analyst at Giga Information Group Inc. in Norwalk, Conn. "EMC wants to get them to write to Symmetrix API's first."

Oracle Corp. and BMC Software Inc. are among the early applicants to the program. EMC is also hoping to attract companies such as Microsoft Corp., IBM's Tivoli Systems Inc. and SAP AG. ■

Introducing CYA* for Y2K

According to the Chairman of the U.S. Senate Year 2000 Committee, "It doesn't matter if every computer in the country is Y2K-compliant if you can't plug it into something." That something is clean, reliable power.

Servers, PCs and the equipment that ties them all together are exposed to the risks of Y2K outages. In fact, a recent survey found network installations without UPS protection on their inter-networking equipment experienced 50 percent more downtime.

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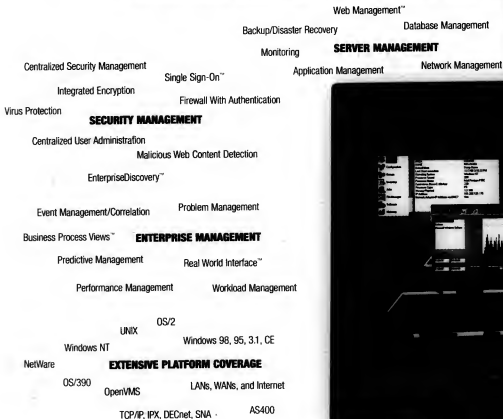


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Baan Fills Supply-Chain Gap

Suite designed to integrate separate management apps

BY CRAIG STEINMAN

ONE OF THE BIG knocks against Baan Co. is that it has been slow to tie together its sprawling collection of applications. But some light may be starting to appear at the end of that tunnel.

This week, the struggling Dutch vendor plans to announce that it will have an integrated suite of supply-chain management software ready to go by late next month. Included will be 16 packages for handling jobs such as supply-chain design, demand forecasting, production scheduling and transportation planning.

Those applications are already available, but they're a mix of internally developed software and products bought during an acquisition spree that ended

last fall when Baan began losing money. Pulling them all together into a unified line remains a work in progress.

That integration "is absolutely critical," said Steve Banker, an analyst at

ARC Advisory Group in Dedham, Mass. Baan has some good supply-chain tools, especially for transportation and distribution planning, Banker added. But compared with rivals such as I2 Technologies Inc. and SAP AG, it has "very little visibility" among users, he said.

Katrina Roche, general manager of

Baan's supply-chain business unit, said the company also plans to announce several new logistics applications for release later this year. They include a global transportation management system and an automated tool for collaborative planning between companies.

But the integration work won't end with the supply-chain suite. Analysts said Baan still needs to finish promised links between its flagship enterprise resource planning software and other applications added from acquisitions. ■

Visual Studio Opens - Even to Java

Add-in tools to bring new features to developers

BY DAVID GREENSTEIN

Microsoft Corp. said it will open its Visual Studio development suite to enable more than a score of partners to integrate their tools. Among the

planned add-ons is a Java 2-compatible compiler from Rational Software Corp.

Rational's Java compiler will be more industry-standard than Microsoft's, which steers users to developing applications with extensions specific to the Windows platform, said Eric Schurz, a vice president at the Cupertino, Calif., company. The compiler could help users who want to develop portable Java applications but still want to use the J++ tool in Visual Studio, he added.

In the King of Prussia, Pa., offices of British pharmaceutical maker Smith-Kline Beecham PLC, principal scientific analyst Thomas Johnson said the company requires that he avoid using Windows extensions to Java. But he

said he likes the integrated features of J++, such as its debugger. Rational's compiler, he said, could be the way to write standard Java applications from within the friendly environment of J++.

The effort to open Visual Studio, known as the Visual Studio Integration Program, will likely benefit developers and Microsoft by making it a platform on which companies can develop applications.

Shawn Myron, a systems analyst at BC Tel Mobility Cellular in Burnaby, British Columbia, said the software is exciting. InstallShield Software Corp. in Schaumburg, Ill., is also a partner, and Myron said he could envision using the software to track his application as it's developed and automate the creation of the installation package. Brian Hall, vice president at InstallShield, said the company is considering doing that. ■

How did a leading phone company increase market share by more than 5%?

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Cisco Targets Midsize Customers

BY BOB WALLACE

Midsize businesses with limited IT resources could stand to gain from a Cisco Systems Inc. program that brings together hardware, software and services vendors to provide such customers with complete systems packages.

Cisco claims that target customers — companies with up to 500 employees — often lack the time, contacts and staff to assemble all the players needed for multifaceted information technology efforts and often overlook networking requirements.

To that end, Cisco last week launched a Web site that IT managers at medium-size businesses can use to provide project data that the networking vendor will use to assemble a team of certified resellers and service providers who can handle the project.

"The benefit would be that all the legwork of coordinating resellers would be done for you by Cisco, who is drawing from a database of those with proven track records," said Scott Eggers, director of information services at toy retailer Wham-O Inc. in San Francisco. "Offloading this work to them is great because it makes my job easier."

The Cisco Resource Network pro-

gram includes IBM, Hewlett-Packard Co., J.D. Edwards & Co., Oracle Corp., Lawson Software, PeopleSoft Inc., QAD Inc. and Structural Dynamics Research Corp.

"The Cisco program creates an important framework which makes it easier for IT managers by having [Cisco] embark on what's been a horrendous process of bringing together the different players needed for complete projects," said Laura McCabe, an analyst at Summit Strategies Inc., a Boston consultancy.

Pressed for Time


However, using the new Web site to enter anything beyond basic customer identification — such as project details — may not be a hit with users who are jammed for time.

"The last thing I want is to fill out a form on the Net," Eggers said. "Give me a phone number of someone I can call now because there's a sense of urgency. I don't think the form part will fly."

Analysts hadn't sensed of similar programs, although some noted 3Com Corp. has been aggressively selling networking gear into the small and mid-size business market for years. ■

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Get Ready for Y2K False Alarms, Panic

Y2K replaces El Niño as the national scapegoat for many unrelated problems

BY KATHLEEN OHLSON
AND THOMAS HOFFMAN

SOME CALL IT the "Bubba effect." Early on Jan. 1, some hard-drinking good boys drove home from a party, hit a utility pole and knock out power across a wide swath of the state. Panicked residents, fearing that the doomsday predictions of Y2K pundits have come true, overrode the telephone circuits and bring that network crashing down, too.

Such a power outage could happen on any New Year's Day. But this particular January, it will be a living nightmare for corporate CIOs and year 2000 project managers, who will have to field calls — from the CEO to the most senior executives — asking whether the company is suffering a Y2K computer meltdown.

Taking the Blame

In fact, it may be hard to tell immediately, and experts predict Y2K will get falsely blamed for all sorts of problems.

Earlier this year, the New Jersey Department of Human Services in Trenton was the first organization to experience all the media attention that comes with a year 2000 glitch — even though there really was no Y2K problem after all.

"It was like moths to a flame" when the media discovered that \$23 million in food aid had been awarded 10 days early to welfare recipients, said Jacqueline Tenenza, a spokeswoman for the agency.

At first, an agency spokesperson and reporters assumed the error was Y2K-related because the software had recently been fixed to handle the

century date rollover.

The story broke Sunday, March 21, with three or four calls from the national media, including *The New York Times*. Tenenza said, yielding headlines such as "Y2K Glitch Delivers Food Stamps Early in New Jersey."

The episode escalated to as many as 30 inquiries from state and national media and five to 10 from trade publications within the first few days, she said.

TV newscasts gave the story a lot of airplay, showing welfare recipients on supermarket shopping sprees. "A technical error became very tangible," Tenenza said.

The welfare agency is accustomed to dealing with high-profile news stories, but this problem hit on a weekend, when the regular technical staff wasn't available to investigate.

By Tuesday, technicians knew what had happened: A worker had manually typed in the April 1 distribution date but had omitted the last digit in 1999. As a result, a contractor's computer read the year as 1990, prematurely distributing the benefits.

That incident likely won't be the only year 2000 false alarm. And companies may have trouble distinguishing ordinary problems from Y2K computer glitches when the phones start ringing off the hook.

"If a tree falls on Dec. 31 and knocks down phone lines just before midnight, I don't have any idea how a [telephone] company will distinguish that from a year 2000 problem,"

said Capers Jones, chief scientist at Artemis Management Systems Inc. in Burlington, Mass.

"We believe that Y2K has the potential to be a major disruption for companies ... even if not a single computer malfunction," said Christopher Komisarjevsky, CEO of Burson-Marsteller, the big New York public relations conglomerate.

"That's because the millennium bug is no longer just a problem of technology, but one of perception," he said.



RICK CARNEY: New York hospital is working on a communications plan

relations disasters as well as computer disasters, Komisarjevsky said.

Already, Y2K is replacing El Niño as the national scapegoat for anything that goes wrong.

In June, American Airlines gate agents in Chicago told travelers their flights were delayed by Y2K testing (News, June 21), but the delays actually were caused by the installation of new radar computers at air traffic control towers.

American spokesman John Houtard acknowledged that gate agents often look for a quick, convenient answer to give harried passengers. "Y2K testing can be an easy answer to give for delays when they really don't know," he said.

Some businesses might not want to say whether a particular problem is Y2K-related, preferring to keep that information "close to the vest" to avoid causing a public panic, said Kazim Isahani, an analyst at Giga Information Group Inc. in Cambridge, Mass. But experts in crisis communications said it's vital to plan for Y2K calamities and deal honestly with the public, shareholders and business partners.

"Say what happened swiftly

and accurately" to foster an image of credibility and reliability with the media and the public, advised Steven Link, president of Lexicon Communications Corp. in Los Angeles.

KeySpan Energy Corp., a utility in New York, has already considered how it should react if, say, a drunken driver takes out an electric pole on New Year's Eve and the accident causes a widespread power outage. "If there was a power outage that was not Y2K-related, we'll be working closely with our public affairs people ... to deal with the press and media" on communicating the cause of the problem, said Rick Siegel, vice president of information technology operations at KeySpan.

In addition, KeySpan will have a year 2000 command center with communications links to state, county and city emergency management personnel, so it will be possible to coordinate the response to any outages.

Tenza cautioned companies to wait until they know all the facts before talking to the media. The mere mention of previous Y2K remediation work led reporters to conclude that Y2K was to blame for the welfare glitch.

Developing a communications plan is a central part of Staten Island University Hospital's year 2000 contingency planning, said Rick Carney, CIO at the New York hospital. "We don't want to have the

Be Prepared

How you can prepare your company for a flood of media calls, whether a crisis is related to year 2000 or not:

- Name a company spokesperson and a backup. Don't wait for the crisis to happen.
- Brainstorm possible crisis situations.
- Deal with your crisis head-on, and have all the facts.
- Don't lie, go off the record, babble or use business and technical jargon when talking to the press.

public react to a false situation," said Carney, who added that the hospital is still in the process of determining who in the hospital will be communicating its Y2K status to the public early next year.

But many companies aren't heeding advice to be prepared. Bill Patterson, president of Reputation Management Associates in Columbus, Ohio, said he has talked to "dozens and dozens" of companies, and not a single one had any interest in a public affairs contingency plan for Y2K glitches. Executives need to ask themselves if they will "be able to react instantaneously to any problem" and communicate with all of the company's audiences, Patterson said.

"I gave up trying to convince them," he said. "We will see who's right?"

Anatomy of an Oops

A sampling of newspaper headlines about a New Jersey computer glitch initially blamed on year 2000.

MONDAY, MARCH 22	
HEADLINE	PAPER
Computer Error Brings Early Food Stamp Credits and Shopping Spree	<i>The New York Times</i> (Section B, page 9)
Y2K Glitch Delivers Food Stamps Early in New Jersey	<i>The Boston Globe</i> (AP story, Section A, page 1)
TUESDAY, MARCH 23	
HEADLINE	PAPER
\$20 billion Error May Be A Precursor of Year 2000 Fiasco	<i>The New York Times</i> (Section B, page 9)
WEDNESDAY, MARCH 24	
HEADLINE	PAPER
New Jersey Scrutinizes to Recover From Y2K Software Glitch	<i>The Detroit News</i> (AP story, technology section)
Food Stamp Error Not Tied to Year 2000, Officials Say	<i>The New York Times</i> (Section B, page 9)
N.J. Officials Glitch not Y2K-Related	<i>USA Today</i> (techlink, page 10A)



Point of View

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Five ways e-business is changing *New technologies come with many opportunities - for those who*

Defining e-business requires few words, yet the definition is replete with meaning: e-business is the use of Internet-based computing to transform strategic business processes. However simple the definition, e-business technologies are impacting the enterprise in a variety of positive and not-so-subtle ways.

Here are five ways e-business is changing life in the enterprise:

1. Your competition is just a click away

This may sound like a cliché, but the threat is very real. Before the advent of e-business, your customers had to drive from store to store, make multiple phone calls, or walk door to door to find

the best buy. Now, they simply click the mouse button. If your competition is set up with a Web site that makes the transaction quick, efficient, and easy, and your Internet presence is lacking, you've lost a sale. To really be ahead of the game, all departments in your enterprise must be in sync and geared to providing one thing: e-service. Your service and support must be twice as dependable as it was before Web-based commerce. More than ever, all business processes must work together to make the sale.

2. Let the customer serve himself

e-business allows your customers to serve themselves. As a result, they are no longer calling

Compaq, Microsoft holding down desktop *Industry leaders helping businesses place focus on customers,*

What's the cost of owning a PC? Higher than many Fortune 500 companies would like it to be. To ease management hassles, Microsoft is tucking some new utilities into Windows 2000, and Compaq has launched a set of services, called PC Lifecycle Solutions, that can take on all or part of an enterprise's PC infrastructure. These latest moves are part of ongoing strategies by both companies to address total cost of ownership issues: management, management, and management.

The Pressure is on

Industry trends are compounding the need for comprehensive service offerings like Compaq's PC Lifecycle Solutions. IT departments are tasked with supporting multiple platforms and a broad array of applications. IT professionals are in great demand and short supply. And the Internet has raised the bar for information access within and among companies — businesses are deploying intranets and Web-enabled commerce applications, and expecting them to hook in with back- and front-office applications.

According to Stamford, CT-based Gartner Group, the cost of maintaining a single PC is \$6,000 to \$8,000 a year. A large part of that figure is the time and resources IT departments spend managing PC software — an amount two to three

times the actual cost of the equipment.

Consider what goes into managing the entire lifecycle of a PC: forecasting, deployment, management, and transition. And often IT departments are so busy handling the logistics of managing PCs, servers, and networks that strategic planning falls by the wayside. "What we're hearing from customers is that a lot of their IT budgets are spent on day-to-day management and operations, such as support costs and help desk services," said Compaq solutions marketing manager Jackie Dillemath. "Rather than using IT resources around those activities, we want to help our customers use those dollars to formulate IT strategies, so they can grow their business in the future."

Banking on Service

Bank of America Securities used Compaq Services support to update nearly 5,000 desktops to be Year 2000-compliant, and to help deploy the largest trading floor outside of New York City. What it got was a concentrated team dedicated to its ambitious project, which was completed in record time. "We have Compaq Services acting as an extension of our own IT organization," said Steve Linder, vice president of desktop engineering at Bank of America Securities, a division of Bank of America, in San Francisco. "Compaq

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Advantage

life in the enterprise can meet the technical and business challenges

on you to serve them. The customer chooses your Web site to make a purchase; from that point it is your job to ensure he walks through the sales process in a satisfactory manner. If you succeed, he'll be back again.

3. Your corporate personality is now displayed on the Internet

Conducting business via the Internet means your enterprise image is perceived and formulated by potential customers as they download your company home page. The efficiency of your enterprise's e-business technology can mean the difference between making a sale or losing it. "You now have a portal that becomes

your relationship value on the Internet. It becomes your personality," says Steve Kirchoff, vice president, strategic marketing for Compaq's enterprise division.

4. No more 18- to 20-month project cycles

e-business technology cycles must be planned and implemented in 90-day project cycles. Fortunately, IT vendors have done much of the work for you, so you can leverage existing Web-based software tools that connect directly into legacy systems.

5. Your environment must be agile

You must be able to reconfigure your network architecture quickly to match business needs. Many companies are implementing both a company intranet and an Internet site. Business-to-business extranets are coming on fast, and your customers are demanding more interaction through e-business.

management costs not technology

Services provides a single point of contact for our desktop/workstation refresh program. They coordinate all the ordering, integration with vendors, and disposal of existing systems by scrubbing them down and removing all our sensitive data." Linder's engineering team was able to spend the time saved developing strategies to

deploy packaged software to desktops in New York, Boston, Chicago, Dallas, Houston, and Seattle. The automated deployment meant fewer trips to remote offices, and it gave the IT department exact knowledge of what software was running on each desktop, making troubleshooting easier down the line.

Windows NT Advantage

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Building a
foundation
for the future:
How to deploy
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with
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Welcome to Windows NT Advantage, the strategic information magazine for IT leaders.

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Point of View

Digging into the
Digital Nervous
System

Microsoft

Point of View

Compaq NonStop eBusiness mines NT, Internet

Windows NT

Five ways e-business is changing New technologies come with many opportunities - for those who

Defining e-business requires few words, yet the definition is replete with meaning. e-business is the use of Internet-based computing to transform strategic business processes. However simple the definition, e-business technologies are impacting the enterprise in a variety of positive and not-so-subtle ways.

Here are five ways e-business is changing life in the enterprise:

1. Your competition is just a click away

This may sound like a cliché, but the threat is very real. Before the advent of e-business, your customers had to drive from store to store, make multiple phone calls, or walk door to door to find

the best buy. Now, they simply click the mouse button. If your competition is set up with a Web site that makes the transaction quick, efficient, and easy, and your Internet presence is lacking, you've lost a sale. To really be ahead of the game, all departments in your enterprise must be in sync and geared to providing one thing: e-service. Your service and support must be twice as dependable as it was before Web-based commerce. More than ever, all business processes must work together to make the sale.

2. Let the customer serve himself

e-business allows your customers to serve themselves. As a result, they are no longer calling

Compaq, Microsoft holding down desktop Industry leaders helping businesses place focus on customers,

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Java Will Survive Baratz's Departure From Sun

Analysts credit division president with spreading Java far and wide

BY CAROL SILVER

ALAN BARATZ, a central figure in promoting Java technology to prominence, caught the industry by surprise last week when he announced that he will resign this month from Sun Microsystems Inc. Baratz, who just last month ascended to the role of president of Sun's newly formed software products and platforms division, plans to join the venture capital world as a managing director at E.M. Warburg, Pincus & Co. LLC in New York.

Baratz's announcement left pundits speculating about the underlying reasons for his departure and mulling the potential impact on Sun's plans for Java technology. But many analysts say they think Java is now solid enough to survive any changing of the guard.

"Alan's departure doesn't affect Java because it's now [spread] into other domains," said Josh Walker, an analyst at Forrester Research Inc. in Cambridge, Mass. "IBM, everyone's committed to Enterprise JavaBeans. Java's here to stay. The evangelism of Java is done."

J.P. Morganthau, an analyst at NCFocus, a consultancy in Hewlett, N.Y., agreed. "Sun has some good, strong people to fill his shoes. Plus, Java has some legs to it."

There are some major corporations utilizing Java extensively as part of their product offering, and I don't know if Sun needs to be in the lead role [anymore], he said. Key technologies such as the Java 2 Platform, Enterprise

Edition, and an updated version of Enterprise JavaBeans could be slowed in the wake of Baratz's departure, said Mike Gilpin, an analyst at Giga Information Group Inc. in Cambridge, Mass. But Gilpin said



ALAN BARATZ: Joking the venture capital world

he doesn't think that he will have much impact on corporate users.

Java's role had been broadening to a wide range of equipment, from small devices such as personal digital assistants and cell phones all the way up to the enterprise.

Baratz's departure "has got to take some wind out of the sails of Sun," said Tim Sloane, an analyst at Aberdeen Group Inc. in Boston. "He certainly was in the leadership position as they kept expanding the role of Java."

"If before they had to execute extremely well to be successful, now they have to execute flawlessly," Sloane said.

With its Java unit under Baratz's helm, Sun had been known to frustrate some business partners — including IBM and Hewlett-Packard Co. — with its insistence on keeping a tight rein over Java future development and evolution.

A sign that Baratz's decision-making may have been challenged came when the Sun-Netscape Alliance opted to base a key product in its arsenal, its application server, on Netscape rather than on Sun NetDynamic's code, some analysts said. Sun had acquired NetDynamics under Baratz's watch.

Sun immediately appointed Jon Kannegard, vice president and general manager of the Java platform, to fill Baratz's post on an interim basis. A company spokeswoman said an aggressive search will be conducted for a permanent replacement. ■

BRIEFS

Perot Systems' Profits Jump

Perot Systems Corp., a Dallas-based technology services company, last week said second-quarter profits jumped more than 50% compared with the same period a year ago. Net income for the quarter ended June 30 rose to nearly \$17 million, meeting Wall Street expectations. Second-quarter revenues were \$292 million, up 9% from the year-ago figure.

Xoom Snaps Up LiquidMarket

San Francisco-based Xoom.com Inc., a direct e-commerce company, last week acquired LiquidMarket Inc. in a \$40 million stock transaction.

Los Angeles-based LiquidMarket offers solutions designed to search for the best prices for products sold by Internet retailers. Xoom.com is on the verge of merging with Citic Inc.'s Smap.com.

Litton Will Fold Its Outsourcing Business

Defense contractor Litton Industries Inc. in Woodland Hills, Calif., last week said it will close its money-losing maintenance outsourcing business and focus on federal government contracts. Litton says that the company's Enterprise Solutions unit was too small to compete in the commercial outsourcing sector with established rivals such as Electronic Data Systems Corp., IBM and Computer Sciences Corp.

Global Crossing's Revenue Doubles

Global Crossing Ltd., which is buying U.S. long-distance carrier Frontier Corp., last week announced a second-quarter profit of \$4 million. The Hamilton, Bermuda-based telecommunications company said sales nearly doubled, but an \$8 million charge to retirement debt produced an overall loss of \$4.2 million for the period ended June 30. Global Crossing is buying Frontier for about \$12.9 billion to gain a U.S. network.

Marimba Sues Novadigm Over Patent

Feud escalates with second lawsuit over software distribution technology

BY ELINOR MILLER ARNONE

Marimba Inc. announced last week that it has sued Novadigm Inc., alleging that it is infringing on Marimba's freshly minted U.S. patent for software distribution technology.

The lawsuit is similar to one Novadigm filed against Marimba in March 1997 — in the same San Jose federal court — over Novadigm technology for updating software on desktops.

Marimba's lawsuit seeks treble damages and an injunction to prevent Novadigm from making or selling products that infringe on the patent. Marimba was issued U.S. Patent No. 5,979,247, titled "Method for the

Distribution of Code and Data Updates," on July 6.

"Novadigm is attempting to enter Marimba's market space in any way possible, including using Marimba's own patented technology and ideas to compete with Marimba," Kim Polse, Marimba president and CEO, said in a statement.

Mountain View, Calif.-based Marimba filed its patent application back in 1996, when the company was known for its desktop software management. But the company has repositioned the Internet technology as a distributed content and software management tool.

"Our technology for update-

ing computing devices has been in the marketplace since 1994, long before Marimba first filed its patent application in 1996," said Novadigm CEO Al-Fin Fitzgerald, suggesting that Marimba's patent might be invalid.

After noting Marimba's repositioning, Fitzgerald added, "Novadigm has been clear from the beginning about what our market space is."

Novadigm, in Emeryville, Calif., introduced its first Internet client for desktop software management in 1995, before Marimba existed, he said. Novadigm applied in 1994 for its patent, which was awarded in 1996 as U.S. Patent No. 5,581,764.

Polse countered that Novadigm didn't enter the Internet market until 1997, a year after Marimba's patent application. Marimba is challenging Novadigm technology that could have been considered "prior art" for Marimba's patent, Polse told Computerworld.

Novadigm's previous lawsuit against Marimba is scheduled to go to trial in November, when the court will determine whether Novadigm's patent is valid. Fitzgerald said. If it's deemed valid, the next phase of the trial will begin in the first quarter of



KIM POLESE, CEO and president of Novadigm

next year to determine whether Marimba infringed on Novadigm's patent, he said. ■

Abreu writes for the IDG News Service in San Francisco. Assistant news editor Mitch Betts contributed to this report.

MARYFRAN JOHNSON

Shining a light

THERE'S A CYNICAL SAYING that "no good deed goes unpunished." If that's really the case, the SANS Institute had better brace itself because it's about to commit a very good deed for us all. SANS is a Bethesda, Md.-based co-operative education and research organization with more than 74,000 active subscribers from the community of system

administrators and network security professionals. The www.sans.org Web site is a top destination for serious, knowledgeable security folks and a great place to learn about SANS events, publications, surveys, resources and contacts.

"This group is one that looks to each other because there's no place else to get the knowledge," says SANS Director Alan Paller. "Nobody holds back or keeps proprietary knowledge about security practices. They all recognize it's a big problem, so they share their experiences."

But public recognition of this type of work is rare. Companies that avoid or recover from electronic security breaches don't exactly trumpet the news to their customers and business partners.

No one really knows the scope of losses from info attacks on corporate America, though estimates range wildly from \$60 million to \$600 million per year in electronic theft, hacks or other business disruptions. What is known is that attacks against government agencies and corporations are increas-



MARYFRAN JOHNSON is executive editor of *Computerworld*. You can contact her at maryfran.johnson@computerworld.com.

ing at a steady rate of 10% a month, Paller says. The most challenging among them aren't the work of criminals or bored teenagers but of disgruntled employees and, in some cases, groups with political causes to publicize.

Basically, the bad guys get all the press. But you can change that by helping SANS with that good deed I mentioned above. The organization is seeking nominations for its 1999 Information Security Leadership Awards, which recog-

nize the projects and people that made exceptional contributions to improving information security in industry, government and academia.

Computerworld is honored to join the panel of judges for these awards, and we'll write stories about some of the winning projects. In the meantime, do your own good deed today. Head over to www.sans.org/security/ award and fill out a nomination form. The deadline for entries is Sept. 12.

Help shine some light on the good guys for a change. ▀

GEORGE W. BUSH

Technology and prosperity: Let dreams flourish

LIKE MANY AMERICANS, I find your industry fascinating and crucial. The high-tech economy is more than just business. It represents daring enterprise, entrepreneurship and innovation.

I'm running for president because our country must be prosperous. But prosperity must have purpose to ensure the American dream touches every willing heart. Our purpose is to leave no one behind. I'm running because my party must match a conservative mind with a compassionate heart. And I'm running to win.

Prosperity is not a given.

Some in the current administration think they invented it. They did not invent prosperity anymore than they invented the Internet. Governments don't create wealth. Americans create wealth — through creativity and enterprise and risk-taking. These are the hallmarks of the high-tech industry, where the great engine of wealth has become the human mind — creating value out of genius.

The role of government is to create an environment where businesses and entrepreneurs and families can dream and flourish. We'll be prosperous if we reduce taxes. I'll have a plan that reduces marginal tax rates to create jobs, a plan that also helps families struggling on the outskirts of poverty.

We'll be prosperous if we reduce regulations that strangle enterprise. And I will do what I did in Texas: fight for real tort reform. Texas was an early protector of the technology industry from Y2K litigation — potentially the biggest ambulance chase of the millennium. I'm pleased to see President Clinton has changed his mind and decided not to veto federal Y2K legislation. I will always take the side of innovation over litigation.

We'll be prosperous if we embrace free trade. I'll work to end tariffs and break down barriers everywhere so the whole world trades in freedom. The fearful build walls. The confident demolish them. I am confident in American workers and producers.

Our current technology export system is broken. Our best companies cannot sell some products abroad — even when foreign competitors sell equivalent technology. I will safeguard military technology and let Americans sell what is already widely available. I will lead efforts to free



GEORGE W. BUSH is governor of Texas and a candidate for the Republican Party presidential nomination. Contact him at georgewb@georgewebush.com.



star-crossed

the sale and export of American computers, as well as other high-tech goods, including encryption software.

And we'll be prosperous if we value innovation. I will lead Congress toward a permanent tax credit for research and development.

America will be prosperous if we do the right things. But prosperity must have a greater purpose.

We should make a solemn commitment in this country that every child will be educated, that no child is left behind.

This is especially urgent in our new economy. We must have a workforce prepared to seize new opportunities. In the short term, America should benefit from the immigration of skilled workers. The limit on H-1B visas should be raised.

But the long-term solution is better schools with higher standards. I've seen what works in Texas. Measure progress. Insist on results. Blow the whistle on failure. Emphasize early reading, early intervention, math and science instruction. Stop promoting students on to the next grade who have not mastered their course work. Above all, don't give up on anyone.

We will prove that someone who is conservative and compassionate can win without sacrificing principle. We will show that politics, after a time of tarnished ideals, can be higher and better. We will give our country a fresh start after a season of cynicism. ■

DAVID MOSCHELLA

Internet giveaways are a dubious business strategy

THESE DAYS it seems that you can get just about any consumer Internet technology for free. Now, even Microsoft is giving away PCs.



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for Computerworld. Contact him at dmoschella@earthlink.net.

There are free Internet service offerings from NetZero, free e-mail from Hotmail and others, and all sorts of free applications from Yahoo and its portal rivals. In addition, just about all text and, increasingly, a great deal of audio and video are now available without charge.

Does this trend represent a monumental breakthrough in society's efforts to bridge the divide between the digital haves

and have-nots? Or is this the just most recent example of the "greater fool" theory, which states that what you do isn't dumb as long as you can find someone even dumber to fund you? And what does this rush of giveaways say about what

non-IT businesses should be doing on the Web?

Classical economics teaches us that giving away a product makes most sense in competitive markets where the marginal cost of producing one additional unit of a product is at or near zero. This simple rule, taught in every course of Economics 101, is a good place to start, because it allows us to quickly separate those free product-based businesses that appear to be most plausible from those that seem much more dubious.

Certainly, free content and application services are consistent with traditional economic theory, especially given the current need to build advertising audiences quickly. Once a piece of text or software has been written, the cost of making a second copy is at or near zero. Also, specific content lends itself naturally to specific types of advertising, enabling much-valued one-to-one marketing. Conceptually, free content and application services aren't all that different from free TV.

Strategies of providing free Internet service are considerably more dubious. The cost curve of a typical service provider looks like a step function. Once a certain capacity has been built, marginal costs do approach zero for a limited period. But at some point, more capacity becomes necessary. These underlying economics suggest that free Internet services will likely prove a temporary and

tactical phenomenon. This is especially so because the affinities between Internet services and advertising aren't nearly as compelling as they are in the content arena.

Finally, because the marginal cost of a PC can never be anywhere near zero, strategies based upon giving away PC hardware are highly dubious. This isn't the cell phone or cable TV business, where commodity hardware is often given away to promote often monopolistic or semimonopolistic communications services. Bundling a free PC with a monthly Internet charge might appeal to some first-time users, but it essentially piles one brutally competitive business on top of another. Worse still, companies trying to cover the costs of giving away PCs solely through advertising revenue will most likely provide an unsatisfying experience for both their users and their advertisers.

None of these concerns will stop the current momentum. Hardware and Internet service vendors will give products away, build audiences, go public and then, sometimes, leave the greater fools holding the bag. It's a high-risk game. For most of us, it's better to stick to proven economics. If you have Web offerings where your marginal cost is virtually zero, you should seriously think about aggressively giving the technology away. Otherwise, I'd tread carefully. ■

READERS' LETTERS

System complexity hurts small firms

I ENJOYED Paul Strassman's article in the July 5 issue ["End Build-and-Junk," Business Opinion].

I guess this recent Windows era of computing had to happen. It certainly made a lot of people wealthy.

And I think that, yes, we are now beginning to see some of the promised productivity increases become reality.

But the business computing infrastructure has also become monstrously complex. And most of this complexity cannot be centralized and encapsulated because it is on the clients.

For large corporations that can afford a full infrastructure support staff, maybe the situation is manageable. But what about smaller companies that need networked workstations and multi-user database applica-

tions but don't have the budget for the requisite support? Maybe there is a market for business infrastructure service providers for these types of companies. Bandwidth may make such a thing possible. I have a feeling that when the "last mile" begins to be bridged, things will really change.

Chris Monaghan
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A hilarious look at tech's grip on society

THOROUGHLY enjoyed Paul Gillin's hilarious editorial about baseball and the Internet ("Strike-three.com," News Opinion, July 12).

We must keep in mind that the use of technology, brought to its inevitable conclusion, will be ludicrous and insidious toward every human endeavor. We can only hope it doesn't affect

baseball and other sacred artifacts of our culture.

Michael Fontana
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Linux may be the cure for Microsoft's worms

ALREADY about a survey on computer security issues (News Briefs, June 28) stated that for the next six months of the year, viruses and worms had cost the surveyed companies \$76 billion.

At some point, one has to wonder why corporate America continues to use Microsoft products when it's quite apparent that Microsoft's operating systems and applications are the targets of hackers around the world.

I wonder if companies wouldn't find it cheaper to train employees on a new operating system and application suite

than it is to continue to battle the constant onslaught on their Microsoft environments. Part of this cost includes repairing damaged systems, not just updating the company's virus-scanning software.

This would seem to be a perfect opportunity for companies to net up pilot projects to evaluate Linux. What do companies have to lose? Money? They're already losing money when a system goes down due to a virus.

Les Hartman
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COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Alan E. Aher, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01901. Fax: (508) 875-8931. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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NetObjects Authoring Server. It's the only collaborative Web authoring solution for corporate intranets. You have complete, end-to-end control, assigning privileges according to skills and responsibilities. Eliminate training headaches and Webmaster bottlenecks, because it's a cinch for colleagues to use. You easily integrate legacy data, applications and systems. And you become the intranet hero with help from our Professional Services team. Want a full briefing? Check out our online demo at www.netobjects.com/info/mademo, or call 888-893-0702 dph.103 now to order your free demo CD, or to arrange an initial consultation.



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JIM BOTKIN

Who's in charge of knowledge management?

THOUSANDS OF COMPANIES worldwide are spending millions of dollars on knowledge management systems. But fewer than 20% of these systems enhance the bottom line, while more than 30% are outright failures. Who's responsible? Who can make the concept sing?

Is it the CIO? IBM's top knowledge management practice leader, Larry Prusak, says no. "Any

knowledge management system that spends more than a third of its budget on technology is not a KM initiative but an IT project," he says.

Is it the CEO? Certainly knowledge management is part of a chief knowledge officer's mandate, but as Motorola University's former knowledge management director, Mark Schleicher, says, "Knowledge management is not a mechanism to fix a screwed-up business."

So it must be the CEO, right? Recent studies have

shown more than 80% of CEOs don't "get it," or fully appreciate the role of knowledge in business. This may be part of the problem, but it's wrong to think a single player or department can kiss an ailing knowledge system and make it better.

What's missing is a new model of management appropriate to a knowledge economy.

Most management models taught at business schools and practiced by CEOs and their underlings emphasize either a centralized hierarchical structure or its opposite — a decentralized flat organizational structure. Many companies swing back and forth every decade or so between the two. The flat model is now in vogue. However, when a firm's stock prices also stay flat, pressures mount to swing back to the centralized model.

But a knowledge economy is both *and* rather than *either-or*. For instance, for knowledge management systems to be effective, they need to gather knowledge from all corners of a decentralized organization and beyond, extending their reach into suppliers and customers. And any knowledge system needs to be centralized to adhere to quality and reliability standards. Otherwise, as CSC's chief knowledge architect Sami Al-banna says, "If two out of twenty hits yield obsolete or useless information, you'll lose your user."

The winners in the knowledge economy will be those companies that can build and operate networked businesses — where centralized or decentralized business units are replaced by linked and interdependent knowledge communities. How these work in different industries will emerge over the next two to three decades. But some indicators are visible now.

Concepts key to the organization of the future are systems thinking, entrepreneurial behavior and knowledge communities. Systems thinking because it's the dynamic connections between nodes in the network and their interrelationships that are key. Entrepreneurial behavior because it's an attitude of risk-taking rather than preserving the status quo that will drive the need for innovation. Knowledge communities because the community concept is eclipsing teams as the form that engages passion, commitment and loyalty — and ultimately raises the bottom line.

So who's responsible for knowledge management? Not just a knowledge management chief or guru, but also company leaders who together create the conditions where networked business can thrive, where knowledge can be shared and where knowledge communities can blossom. The CEOs, CIOs and CIOs who understand this will be those who make their knowledge systems sing. ▶

WILLIAM ULRICH

Take care of your staff so they can work on Y2K

I WAS IN A ROOM with more than a hundred people for a global contingency planning session. One underlying assumption was that each business unit would have fully staffed teams of workers at the helm during the New Year rollover weekend.

Then a voice from the back of the room said, "Ninety percent of my people are single parents. Where will they get 72 hours of day care on New Year's Eve weekend?" The room fell silent.

This is not an isolated situation. While the best companies have determined that employee stability is key to managing the year 2000 transition, many more have omitted this factor from the contingency planning equation. When you consider basic human needs and year 2000 challenges, the risks associated with ignoring the people factor become profoundly obvious.

I have seen numerous examples where people

were left out of this planning process. Many large companies, for example, have installed generators to run computer networks, command centers and safety-critical environments in case of power outages. But if the power is out in Minnesota, does any executive really believe that people will abandon their families to come to work?

One company feared that the local water district would not provide clean drinking water after the century rollover, so they bought bottled water for employees who have to perform a plantwide test on Jan. 2. Sounds like a great idea. But did management consider that the only safe place to get drinking water might be on the job? People working that weekend could get drinking water, but their families would be left high and dry.

The bottom line is that if your employee needs are met, those employees will be in a better position to keep your company operating smoothly through the millennium transition. Let's consider some ideas that companies can use to ensure that employees are ready for the year 2000.

Executives should ensure that employees are educated about Y2K-related risks — and this includes year 2000 project team members. A contingency planning director told me that his family was doing nothing special for Y2K. This was the same person overseeing the procurement of backup communication devices, bottled water, generators and propane. This disconnect should be addressed through training sessions, stressing that employees should be no less prepared for Y2K than their company.

One company is running brown-bag lunch sessions on personal Y2K preparedness. Other companies are distributing the *Utne Reader* Y2K Citizen's Action Guide to employees (available at www.utne.com/y2k). One large employer in a small town is considering sponsoring Y2K awareness programs for small-business employees as a gesture to the community. For employees directly linked to a year 2000 project, companies should consider special programs such as providing food, water and day-care services for employees working during the century rollover.

One way to ensure that employees come to work amidst Y2K challenges is to help their families. Some employers will allow families to come to work over the rollover weekend, although this is not an option where safety is an issue. Employers can also promote preparedness for families living in the same neighborhood. A group of families could create a common support system to address transportation, power, communication, water or other failures that might occur.

Creating work-at-home programs in cases where fuel costs rise or extending employee credit if cash access becomes a problem could help deal with some of the long-term Y2K impacts. Management should also create reward and stress-management programs for employees working long hours in the early months of 2000. All of these ideas can go a long way toward ensuring that your employees have their personal needs met so that they can better perform during the Y2K transition window. Don't leave your people out of your year 2000 contingency plans. ▶



Jim Botkin is president of InterClass Inc. in Cambridge, Mass., and author of *Smart Business: How Knowledge Communities Can Revolutionize Your Company* (The Free Press, 1997). Contact him at botkin@interclass.com.



William Ulrich is president of Tactical Strategy Group Inc. and co-founder of Viacom Research L.P. Contact him at will@tacticalgroup.com.

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BUSINESS

CUTTING COSTS

Shoemaker Bally USA switched entirely to contract labor in its warehouse last fall. That, plus a warehouse management system that radically reduced the training that temp workers need, slashed shipping costs 20%. **» 38**

IMPROVING SERVICE

Farmers Insurance is revamping the way it processes 3.7 million damage claims per year, linking document management and call center software with main-frame data. The software cost \$18 million, but claims processing is now days or weeks faster. **» 38**

WRONGLY ACCUSED?

Jennifer Granick is the go-to attorney for the hacker set and also for internal security people worried about being wrongly accused. In our Q&A, she talks about an employer's surveillance rights and what you should do if you're wrongly accused. **» 41**

THE GREAT IT DICTATOR?

Peter G. W. Keen imagines what the computer world would be like if he were dictator. The people would be diverse, but the hardware wouldn't, and there'd finally be a way to rein in out-of-control users and high-tech gurus who have more hot air than hot ideas. **» 44**

LEGAL SIGNATURE

Congress and the National Conference of Commissioners of Uniform State Laws are attempting to establish legal standards for digital certificates, but consistent legislation must still be approved in 50 states. **» 41**

MEASURING PRODUCTIVITY

Technology produces tremendous change in the way companies do business, but justifying costs can be tricky. In this excerpt from his upcoming book, Paul A. Strassmann lays out his method for making sure IT makes sense for business. **» 52**

BAD BOSS

Staffing woes are sometimes about the shortage of talent; other times they're about bosses who drive the best talent out of the company. These tales of the best and worst bosses help show how the rank and file might feel about your leadership. **» 48**

CHICKEN OUTFIT

What's it like to work in IT at Tyson Foods in Arkansas? Picture a cube farm in a former grocery store. Also picture rafting, parties, rubber chickens and plenty of camaraderie in this spirited, ruraly-situated organization. **» 56**

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THE DEMISE OF A BUZZWORD

AFTER FIVE YEARS OF WORK, knowledge management pioneers like GM's Vincent Barabba (pictured) are disenchanted with the notion of trying to manage what people need to know. Instead of controlling knowledge or building knowledge management into a discipline, they're turning to more modest approaches to share what employees have learned.

50

System, Contractors Save Shoemaker 20%

Bally USA cuts training time in warehouse

BY CRAIG STEINMAN

LOOKING TO CUT costs in its warehouse, shoe vendor Bally USA Inc. last fall switched entirely to contract labor. Now it's using a new warehouse management system to reduce the training needs of temporary workers.

Bally USA was running a homegrown IBM AS/400 application in the warehouse when it laid off the 19 nonunion employees who worked there and began relying exclusively on staffing agencies. But teaching contract workers how to use the system usually took half a day or more, said Ed Botto, director of distribution logistics at the New Rochelle, N.Y., company.

That wasn't always a problem because Bally USA had a core group of about a dozen contract workers. But its shipments endure seasonal peaks and valleys, and the number of

Financial applications from SAP AG were installed late last year and turned on in January, running on Windows NT servers.

SAP's order processing and materials management software for apparel and footwear companies is due to be installed next year.

workers needed in the warehouse could vary widely.

For example, Botto said the firm has brought in more than 50 workers on some days in July and August to handle the crush of orders for fall shoes from retailers. Some of those workers spend only a few days in the warehouse, he added.

To help ease the crunch, Bally USA two months ago

turned on a new AS/400-based system, combining packaged warehouse management software with handheld, radio-frequency devices that help workers find the products to fill orders. New workers now spend about an hour learning the ropes by tagging along with a more experienced laborer.

Not Y2K Ready

Bally USA had other concerns with the new warehouse system, which uses software from Manhattan Associates Inc. in Atlanta that was installed with help from consultants at IMG Americas Inc. in Philadelphia. For starters, the homegrown software wasn't year 2000 ready, said Harold Goldberg, Bally USA's director of information technology.

But the contract labor strategy in concert with the new system is expected to pay big dividends. Botto said Bally USA is seeing a 20% reduction in the cost of shipping products from the warehouse in the wake of all the changes. ■

Farmers Insurance Revamps Claims Processing System

Integrates call center, documents

BY DOMINIQUE DECKERT

Farmers Insurance Group of Companies is spending more than \$58 million on software alone to revamp its claims processing system and cut days or weeks out of the procedure.

The car and home insurance firm is integrating call center and document management software with some mainframe data in a system scheduled to be completed next summer.

Richard Roby, director of insurance research at consulting firm TowerGroup in Needham, Mass., said claims processing

Corp., Farmers Insurance will allow claims professionals to instantly access all information about a customer's policy and the status of his claim.

Deb Mukherjee, chief technology officer and vice president at Farmers Insurance, said customers and agents in the field will also be able to see the status of a claim via a browser.

Farmers Insurance wouldn't disclose the total cost of the project, but the Siebel and FileNet software alone will amount to about \$18 million, Mukherjee said. On top of that, the re-engineering will require massive retraining of staff.

Farmers selected Siebel 99 Insurance over competing soft-



FARMERS' DEB MUKHERJEE plans strategies at his group's outboard board

is hard to automate because "there is a lot of unstructured data," such as photographs and police reports.

"Farmers is probably the furthest along in automating portions of claims processing," said Roby, who predicted that the integration of call center software and document management software "is going to be increasingly employed" in the insurance industry.

Today, Farmers' claims come in on paper or are input to a mainframe system by a sales agent. They are then printed and sent to the claims office. By integrating Siebel 99 Insurance from Siebel Systems Inc. with Panagion document management software from FileNet

ware from Corepoint Technologies, Vantive Corp. and others. For the document management part, Mukherjee said only FileNet's Panagion and IBM's EDMSuite could handle the volume of 30 million documents per year.

Alan Weintraub, a research director at Garner Group Inc. in Stamford, Conn., said the Farmers project also points to another market trend: Document management vendors such as FileNet are increasingly focusing on complex vertical applications. Lower-priced products from Lotus Development Corp. and, in the near future, Microsoft Corp. are partly driving this trend, Weintraub said. ■

Two Bank Deals Equal One Big IT Project

BY THOMAS HOFFMAN

For Citizens Financial Group Inc., moving two major bank acquisitions onto its computer systems at the same time might be more of a labor issue than a technical challenge.

The Providence, R.I.-based bank has two deals pending — a \$2.2 billion bid for State Street Corp.'s commercial lending business and a \$1.4 billion offer to buy US Trust Corp., both based in Boston.

But while Citizens plans to trim 800 jobs after acquiring US Trust, mostly in branch-related positions, the combined banks will still have 500 openings to fill.

Plus, Citizens won't inherit any systems or staff from State Street's commercial lending

business because the deal is merely a transfer of State Street's customer base. As a result, State Street's customer accounts and sales force will be moved right onto Citizens' applications platform.

Meanwhile, most of US Trust's systems will be converted to Citizens' platforms next year, with the exception of a few that will be retained, such as US Trust's wire transfer system, said Bernie Baum, CIO and group executive vice president at Citizens.

Baum said he and his team have

"our work cut out for us." For example, although Baum declined to disclose how many information technology and operations staff Citizens is picking up from US Trust, he

acknowledged that "we have more need [at Citizens] than they have people" at US Trust.

The Hunt for Help

To help satisfy its thirst for IT and operations talent, analysts say they believe Citizens has been recruiting technologists from New England rivals Fleet Financial Corp. and BankBoston Corp., which announced their own \$15 billion merger in March [News, March 22].

Typically, when two big banks come together in the same geographic area, smaller banks and headhunters "pluck a lot of the talent," according to Art Gillis, president of Computer Based Solutions Inc., a Dallas-based bank consultancy.

Baum declined to comment. Yet, despite a busy conversion schedule and year 2000 work, he said, "We feel comfortable we can do what we have to." ■



CITIZENS' BERNIE BAUM: "We have our work cut out for us"

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Can you imagine the world's top 10 aerospace companies, top 30 telecommunications companies or 17 of the top 20 stock exchanges having to slow down because an IT solution didn't arrive on time? They can't. Would 18 of the top 20 U.S. banks, some of the world's largest e-mail systems or three-

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The Linux Parade: Where is it Heading?

SOLUTIONS TODAY:

LINUX IN THE

Having monitored Linux's progress for the past nine months, Aberdeen Group sees telltale signs of it coming of age as a true alternative enterprise operating system. The appearance of Linux—a product borne of Internet collaboration—coincides with the maturing of both Windows NT and Unix as “short list” choices for global 2500 firms.

By
Sandra Steere Potter
Aberdeen
Group

Aberdeen uses the word “maturing” because it implies an arena in which most of the existing market for the product(s) has been captured by firms that survived the weeding out process that always occurs. The Unix vendors—primarily, Hewlett-Packard, IBM and Sun Microsystems—captured the market for high-end servers, as well as for scientific and technical workstations, while Microsoft took control of the market for low-end servers and office desktops. With the onset of maturity, vendors are working to maintain and grow market share with frequent enhancements to power and features, while growing revenue with per-client, per-server charges.

In this same time period, companies began to recognize the potential for their IT infrastructure to be a competitive asset. Yet, declaring IT an asset did not mean that management moved to institute zero-based budgeting. Frequently, the top-down commands for more and better computing power were handed down without the monies needed to purchase a solution from a vendor on the approved short list. And for some of the needed applications, the existing solutions—NT and Unix—might be viewed as either functional overkill or too expensive in terms of per-server or per-client charges. And let's not forget the multiplier effect on service and support that occurs when another server is added! Enterprising folks in the IT ranks, particularly those with Unix rather than NT backgrounds, quietly pulled Linux in as their bottom-up solution.

To those who remember how the PC crept into the enterprise—without the knowledge of those in the IT glass house—history is repeating itself. And to those who are looking at where Linux is primarily deployed—print-and-ftp, e-mail and Web services—and dismissing it as, at best, a fringe player, let's examine what has occurred just since September of 1998.

Microsoft cited Linux as a competitive threat, causing the press to pick up their coverage of this David versus Goliath saga. Talk about opening up Pandora's box! IBM sentiment certainly won't create a large market but it sure got the publicity ball rolling. Don't forget Newton's second law of physics: Objects in motion tend to stay in motion.

By
Sheryl Lindsell-
Roberts

EVERYONE'S JOINING THE LINUX PARADE

In the midst of a critical application, all of a sudden you see the dreaded Blue Screen of Death: "A fatal error has occurred. Press any key to continue." You start pressing keys but nothing gets you back into your application. Your system has crashed, so you must reboot.

The good news is that problems like this are only innate to certain operating systems. Crashes don't happen to Jon "Maddog" Hall, a Linux user and author of the book *Linux for Dummies*. "For a Linux user, rebooting the system should be an infrequent occurrence," he says.

That's because, like the Energizer bunny, Linux just keeps on running. Built on several decades of Unix development, Linux is a highly reliable and stable open source operating system, one that many businesses and government agencies are starting to rely on to deploy their mission-critical applications.

The open source concept isn't a new one. Open source solutions have always led the market. (You don't have to look any further than the success of Microsoft to see how Bill Gates capitalized on the open standards of the IBM PC platform.) Although Linux is an open source operating sys-

tem, that doesn't mean that applications developed for Linux must be open source as well. When you modify the Linux kernel, you must release the source code. However, this doesn't apply to self-contained applications that don't modify the kernel itself.

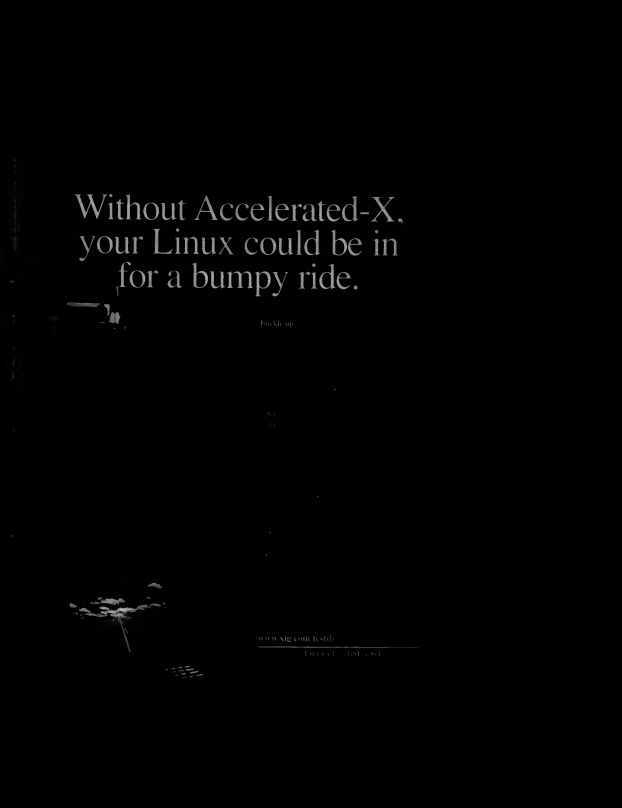
VA Linux Systems is a builder and designer of high-end Linux machines, based in Sunnyvale, Calif. In the spring issue of *Linux Magazine*, Larry Augustin, the company's founder and president, was quoted as saying, "Open source leads to better, less expensive software. Open hardware creates commodity pricing around hardware." As an example, Augustin used the Web broadcasting company WaveTop, which he said, "recently placed all of their Windows NT file servers with Linux, and found their performance went up and maintenance costs went down."

Companies that don't want to miss the open source phenomenon are joining the Linux parade. Compaq Computer Corp., Hewlett-Packard, IBM, Intel Corp. and Oracle Corp. are just some of the leading vendors that have come out with enterprise products based on Linux.

Compaq was the first system vendor to join Linux Inter-

The Linux marketplace is exploding, with companies like Alpha Processor (www.alpha-processor.com), which offers a microprocessor designed for Linux PCs; DCG Computers (www.dcginc.com), a maker of Alpha workstations in Linux Beowulf configurations; and SuSE Inc. (www.suse.com), which offers its own form of Linux.





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"None of the freeware alternatives, including the K Desktop Environment and GNOME, are complete enough to compete at this time," *Performance Computing Magazine*

If you're looking to bring Linux into your corporation, maXimum cde might just be the bait you've needed. And if you think you can get this level of performance, confidence, and support with just any GUI: go fish.

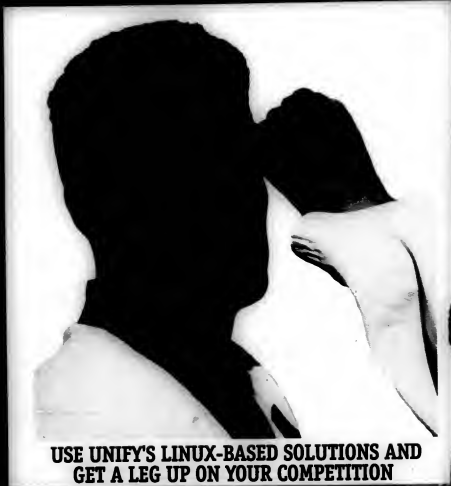
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A Sign of the Times

Efforts under way in states and in Congress to legalize electronic signatures

BY PATRICK THIBODEAU
WASHINGTON

MANY companies don't use digital or electronic signature technologies because electronic signatures don't carry the same legal weight as a pen-and-ink signature. It's a problem that's hindering e-commerce, and it has prompted national efforts to change existing laws.

Ford Motor Credit Co. in Dearborn, Mich., for instance, has implemented a new credit approval process that allows customers to complete a credit application and securely send it online via the Internet.

But its customers must still go to the dealership to sign the credit application and con-

tract, said Jeffrey Skogen, Ford Credit's Internet market manager, at a recent congressional hearing on the issue. With electronic signatures, the entire transaction could be handled online, he said.

Legal changes to allow that are in the works. The National Conference of Commissioners on Uniform State Laws, at its meeting last month in Denver, approved the Uniform Electronic Transactions Act (UETA), which would set rules governing digital signatures.

But UETA, to gain universal acceptance, must be adopted

MORE ONLINE

For Computerworld coverage of digital signatures and links to related Web pages, visit our Web site:

www.computerworld.com/news

by legislatures in all 50 states, a process that could take up to three years. That has prompted a push in Congress for an electronic signature law that would also set a consistent, national legal standard. The Senate Commerce Committee recently approved legislation that would accomplish that, and the proposal now awaits the vote of the full Senate.

UETA and the Senate measure are both "technology-neutral" — they don't dictate any

particular digital signature technology. It will be up to a business to decide what technology to use. The goal is to "take existing law and adapt it to e-commerce," said John McCabe, legislative director of the National Conference, and not go into areas "where we ought not to be interfering."

Those legislative changes are important because "there are numerous legal and business process issues that need to be pounded out before you can really start doing high-value transactions electronically," said Abner H. Germanow, an analyst at International Data Corp. in Framingham, Mass. ■

Mattel Customizing Site, E-Mail

BY MATT HANSEN

When Mattel Inc. in El Segundo, Calif., launches a new online superstore in the fourth quarter, officials expect to expand an online customer database from 25 million to 40 million customers.

Mattel, which acquired The Learning Co. (TLC) in Cambridge, Mass., in May, will take its online sales of HotWheels and Barbie to the TLC site, accounting for the increase to TLC's existing database, company officials said.

Keeping track of the expanded customer communications and customer data will be difficult enough, but Mattel officials also plan to use the data to send customized e-mail and Web pages to customers, according to Peter Woodman, director of database marketing at TLC.

"We can launch one-to-one personalized campaigns" through e-mail and on-the-fly changes to the Web site that use information about visitors from prior buying history or data gathered at the site, Woodman said.

TLC plans the innovation for Mattel using a new Web-based marketing automation product called Prime@Vantage.com from Prime Response Inc. in Denver. Installation prices for Prime@Vantage.com range from \$400,000 to \$1 million.

"We think the personalization and the one-to-one marketing in the e-mail and online campaigns will make a big incremental return on investment," Woodman said.

"These tools are really designed for companies to use the information they have on customers and prospects to provide opportunities to upsell and cross sell," said Steve Bonadio, an analyst at Hurwitz Group Inc. in Framingham, Mass. ■

MORE ONLINE

For reports on Web-based marketing, such as tactics, publications and articles, visit our Web site:
www.computerworld.com/news

In Defense of Accused Computer Crackers

Fine line between what's legal and what's not

Jennifer Granick is a San Francisco-based criminal defense attorney. Many of her clients are corporate employees charged with improperly accessing company computer systems.

This is part two of Computerworld reporter Ann Harrison's interview with her.

Q: What advice do you have for companies that detect an intrusion?

A: You want to preserve the evidence. You want to do the investigation in a way that is reproducible so a jury or a defense attorney can follow what you did.

No one wants to see an innocent person wrongly accused. [But] because electronic evidence is so delicate and so susceptible to unintentional alteration, it has to be handled in a special way.

Q: What online surveillance of employees is permissible?

A: The business or the [Internet service provider], whoever is a provider of the network, is allowed to monitor a network to maintain it. It is an exception to the wiretap and Electronic Communications Privacy Act rules.

Q: What if law enforcement agencies



or the FBI gets involved?

A: One thing we have to be careful about is the distinction between a wiretap and a subpoena. For a wiretap, you need a search warrant authorized by a judge based on probable cause. It also requires a showing of other factors and is harder to get than a search warrant.

The only thing you need to get a subpoena is a pending

court case. The prosecution or the FBI can issue a subpoena from their office.

In circumstances where records are subpoenaable, e-mail or financial or phone records, there is no judicial review of whether the [investigator] has any good reason to ask for these records. Phone numbers you are dialing could be disclosed to law enforcement without your knowledge.

Q: What advice do you have for a person accused of a computer crime?

A: The most important thing they can do is keep quiet and call a lawyer. Once you are accused, there is very little benefit that can accrue from trying to handle the problem yourself.

The law is complicated; the law can be vague. Your rights are complicated, and those can be vague. It is just as important to hire a lawyer when you are innocent as it is when you are guilty, maybe even more so.

Even if you are suspected wrongly, [law enforcement officials] will remember and write down all the incriminating things that you say and forget and notice less the exculpatory things you say. ■

Because electronic evidence is so delicate... it has to be handled in a special way.

JENNIFER GRANICK,
CRIMINAL DEFENSE ATTORNEY

Travel Sees Slow Start

But Y2K bug isn't keeping people home

BY STACY COLLETT

Millennium revelers who were expected to spend this New Year's Eve at exotic destinations are instead choosing to stay home — but not because of year 2000 computer problems jitters.

Only 8% of 400 consumers surveyed by Cahners Travel Group in Secaucus, N.J., have made travel arrangements for New Year's; another 9% are considering travel.

Other Reasons

But only 7% of those surveyed said they are staying

home because of Y2K fears. Most said they're staying home because there's plenty to do in their own city (cited by 50%), they can't take a vacation at that time of year (40%) or they just don't care about the millennium (43%).

According to the Air Transport Association, 33.5 million passengers boarded airplanes over Christmas and New Year's Eve in 1998, up 500,000 from 1997. Exact figures for flights booked this year are scanty, but industry groups said there are fewer than expected so far.

"There's really no set number, but people were expecting a tremendous amount of people traveling. Right now, there is a tremendous interest. It just hasn't shown up in bookings so far," said Cathy Keefe, a manager at the Travel Industry Association, a trade group in Washington.

Low Level of Concern

Even though the vast majority of those surveyed by Cahners said they believe some glitches will occur as the date changes from 1999 to 2000, their level of worry averages 3 on a 10-point scale. But 6% specifically ruled out air travel over the holiday.

Some perennial New Year's hot spots such as London, New York and Las Vegas are still selling well, Keefe said. In regard to other areas, "as prices begin to drop — as they are — bookings will go up," she said. ■

SNAPSHOT

Banks Are Ready

Progress of the nation's 10,325 banks on the year 2000:

STATUS	BANKS	PERCENTAGE
Ready (highest rating)	10,246	99.2%
Need improvement	79	0.8%
Unsatisfactory	12	0.3%

SOURCE: FEDERAL DEPOSIT INSURANCE CORP. WASHINGTON, AUG. 2, 1999

N.Y. State Juries Catch Break

BY THOMAS HOFFMAN

New York state court officials have ordered judges to skip their first jury selections in January 2000 to ensure that there aren't any lingering year 2000 problems.

The New York State Office of Court Administration doesn't expect any Y2K-related computer problems next year, but the agency has ordered judges

to disregard jury calls on Monday, Jan. 3, in case there are computer system-related snafus, according to an agency spokeswoman. The thousands of potential jurors who are usually called in on Mondays and Wednesdays by the state won't be called in.

Jury calls are expected to resume Wednesday, Jan. 5, the spokeswoman said. ■

YOU'VE GOT 3 MONTHS
SYSTEM IN 60 LOCATI



Feds To Set Up Y2K Database

Will monitor rollovers around the world

BY NANCY WEIL

The U.S. government plans to create a massive database of information about global preparations for the year 2000 computer problem that will have running updates from various countries and industries as Jan. 1 arrives in each time zone.

"The public obviously needs to know what is happening," John Koskinen, chairman of the President's Year 2000 Conversion Council, told a U.S. Senate committee recently. He also noted the need for

governments and industries to have access to accurate, timely information about what is happening in their countries and around the world.

The hearing was called in part to justify the \$40 million cost of the Y2K Information Coordination Center (ICC), described in a committee statement as a "crisis management facility designed for real-time communication between government agencies and the public and private sectors regarding Y2K-related problems."



Y2K COUNCIL'S JOHN KOSKINEN is coordinating the efforts

The ICC is expected to start shutting down in March, after officials monitor how computers handle the Feb. 29 leap year date. But the information gathered by the center will be used by other U.S. agencies as the world moves into what Koskinen and others say will be an era of other high-tech threats.

The goal is to issue updates every four to six hours starting at noon EST on Dec. 31 as New Zealand enters 2000.

The ICC is setting up industry information clearinghouses, where preparation data will be augmented with what's happening to companies as the date change occurs. Industry-specific help desks will monitor what's going on and offer assistance when needed. Koskinen said. If problems arise, the ICC's industry-specific help desks and mass of information will be used to let the public know how long power outages and the like might last.

The center is also coordinating updates with other countries and industries, Koskinen said, adding that the European Union recently began working harder on year 2000 issues.

Member nations will meet next month to discuss contingency efforts. ■

Weil writes for the IDG News Service in Boston.

SNAPSHOT

Computer Comparison

Show two leaders in the motor vehicle parts and accessories industry are doing on year 2000 preparation:

	DATA CORP.	JOHNSON CONTROLS
Fortune 500 rank	127	131
Costs as of 3/9/99	\$53M*	\$35M
Estimate of total costs	\$100M**	\$48M - \$50M
Notes	As of last report released in May, expected to complete all testing for internal systems by end of June.	Many systems are ready. All significant systems expected to be ready by Sept. 30.

*As of Dec. 31, 1998, reported expenditures
** Estimates based on anticipated capital expenditures

SOURCE: COMPANY REPORTS TO U.S. SECURITIES AND EXCHANGE COMMISSION


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BRIEFS

E-Commerce Adds 50% to IT Tab

Workforce IT spending is expected to rise 50% to \$5.3 trillion by 2002, fueled by e-commerce initiatives that are expected to account for up to half the tab, according to research from Gartner Group Inc. in Stamford, Conn. Information technology spending this year is expected to peak at \$2.2 trillion, with 40% of that related to your 2000 costs.

NBA CIO Joins Home Box Office

Michael Gabriel has joined Home Box Office as New York's senior vice president and CIO. Gabriel, 36, was vice president and CIO at the National Basketball Association.

Y2K Compliance Declining?

The number of software products receiving their Y2K-ready status is going up, not down, according to one Y2K compliance-tracking firm. Last month, vendors for 50% of the 125 software products evaluated made "negative" changes to their Y2K ready status, according to Inhibit Corp., in Pittsburgh. That

means the manufacturer has downgraded Y2K support, or has encountered previously unknown Y2K issues.

Oracle Sponsors Business Met

Oracle Corp. said it's setting up a business-to-business online marketplace that companies will be able to use without installing any of its software. Oracle Exchange is due to open by year's end and will be run as part of a new application hosting service. Users will be charged an unspecified transaction fee to buy or sell goods on Oracle Exchange, Oracle said.

Procurement User Goes Live

SAP AG said Lockheed Martin Corp.'s Baller-based modules and free-control devices has become the first user to go live with SAP's new online procurement software.

Simulated Trading

The Chicago Mercantile Exchange (CME) has launched a simulated trading program that allows investors to receive information about futures trading that member firms provide, including profit and loss statements, research and advice about trading activities.

The Internet Simulated Trading program, which is dedicated to CME futures and futures options, costs \$24.95 per month for up to three months. The Web address is <http://cme.com/realnet.net>.

Mount Sinai Appoints CIO

Sharon L. Segerman has been named CIO at Mount Sinai MWH Health in New York. Before joining the health care organization, Segerman, 55, was director of IT at Dell Sales and Service Corp.

PETER G. W. KEEN

If I ran the IT world

IF I WERE the dictator of the world, there are a few laws I would put in place at once. They'd be eccentric and self-centered, of course — what's the point of having power if you can't misuse it? Under my rule, Barbra Streisand and German shepherds would be silent. Elementary and junior high school teachers would be paid \$90,000 per year but have no tenure rights. And airline executives would live entirely on the same food served

in their airborne cattle trucks.

And if I were the dictator of the information technology world, I would issue the following commands — again, eccentric but equally aimed at making a better world for all of us.

1) Customization and variety in software are banned. Employees' "personal" computers belong to the company, and there will be an end to the absurd extra costs of support, middleware and operations that dominate and wear down IT organizations. Employees wouldn't dream of asking the company to add an indoor swimming pool to the restrooms. They will stop thinking they have the right to do the equivalent with the company's IT resources.

2) IT will be as diverse as its customers. IT staffers at all levels will be responsible for hiring people for their team. The rules are they must choose someone who is the opposite of themselves in at least seven of the following 10 dimensions: sense of humor, age group, sex, ethnic background, hobbies, politics, physical shape, views on Microsoft, sexual orientation and preference for beer vs. soft drinks. There will be only one quota: 30% of new hires must be someone you'd never want your son or daughter to marry. The goal isn't passive compliance with federal equal employment opportunity mandates, but welcoming broader design skills, personal contacts and creativity into the narrow, overstructured mind-set in most IT organizations.

3) Self-proclaimed cybergurus must apply for a license. When they want to publish a business book about the "Internet Something," it will first be reviewed by technical experts. Technical books must be reviewed by business experts. If the review panel finds clear errors of business or technical understanding, the author will be required to eat his or her words, with the option that the book be microwaved and served with maple syrup.

4) Internet forecasters will be fined the difference between what they say the electronic-commerce market will be in 2001 and what it turns out to be.

5) I would issue a National Truth in Information Technology Act. Software vendors won't be allowed to release any product unless they can show it actually works as promised. The act also makes all CIOs liable for any economic damage caused by the purchase of vaporware or brochureware.

6) Vendors will publish full-page ads in *The Wall Street Journal* when they miss a previously announced delivery date. Those will be headed:

"We lied to our customers." Vendors' sales reps will be sentenced to solitary confinement with nothing to do but read their companies' sales materials — a week for every million dollars of installation delay.

7) These terms are banned from polite discourse and subject to a \$20 fine: paradigm, out-of-the-box thinking and portal.

8) IT professionals will have their own bill of rights: a less-than-70-hour workweek, at least 30 days of education per year, plenty of personal and direct contact with their CIO, plus on-time and in-depth performance appraisals.

9) IT workers' spouses or lovers and their children will have the right to file a report to the human resources department on their concerns about their loved ones not being around, and

being overworked and overstressed. The reports will be admissible evidence in divorce cases, and judges will have the right to add to the alimony award a fine on the employer for loss of spousal quality of life.

What would you do if you were the Great IT Dictator? »

Keen is co-editor of the newsletter "YOU2K Now." For more information, visit www.you2k.com. Contact Keen at peter@peterkeen.com.

I would
issue these
commands...



40% don't install software updates

40% don't follow the organization's security policy

30% don't follow the organization's security policy

SOURCE: INTERNATIONAL INFORMATION SECURITY ALLIANCE (ISA) AND SECURITY CONSULTANTS, 1999

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Bosses from Heaven

By Brynwyn Fryer

A good boss is hard to find.

That appears to be the opinion of information technology professionals who responded to our Web posting in late June asking for stories about their best or worst bosses.

Sadly, only 13 out of nearly 70 respondents — most of whom weren't managers — had anything good to say. The rest said their managers should win the title of worst boss.

"[Dilbert cartoonist] Scott Adams was right," wrote one reader, who had soured on his higher-ups. "The world would be better without management."

Certainly, it's easier to criticize than praise — and as you can see by what follows, stories about bad bosses make for engaging reading. But as a whole, the stories reveal there's something rotten in the state of IT management.

The lessons from these tales of wonder and woe? For IT staffers, recruiter Beverly Lieberman at Hallbrecht Lieberman Associates in Stamford, Conn., suggests shopping for bosses who are as interested in your success as they are in theirs. Do this by asking a lot of questions before accepting the job. Find out if there's been a lot of turnover in the department under the boss — more than 15% is a sure warning sign.

"And if you're in a good company and have a poor boss, work with your [human resources] people to see what can be done to move you," Lieberman says.

And the lesson for senior managers and CIOs? Simple: To avoid an exodus of IT folks in a time of labor shortage, follow the golden rule of doing unto others. Hope you don't recognize yourself in the examples shared in the Hell section. And pay attention to the examples in the Heaven section, where clearly, it's often the little things you do that count.

To gain some insight into what the rank and file say makes a good or bad IT boss, read on. And don't forget to tape this article up on your boss's door.

(Names are withheld, except where praise is due. Respondents' letters were edited for brevity and clarity.)



BOSSSES FROM HELL

The Boss Who Knows Nothing About the Job

• One contract programmer at my client site showed our vice president of MIS some code he was working on. She looked at it for about two minutes, then asked, "Could you sit down with me and tell me what I'm looking at?"

• Close to deadline on a nonfunctional Windows NT network, my manager told me that I should be able to write "pseudo code" in Microsoft Word and, if necessary, "a bunch of contractors could be hired a month before the due date to just go ahead and code the system and make it work."

• I actually had a boss who once said, "Give

me a list of all the unknown bugs in this system."

• The CIO of the company told me, "I understand that you are working toward becoming a Microsoft Certified Engineer. You programmers don't understand that we are in the insurance business. Technical certification implies disinterest in insurance and a lack of loyalty to the company. I challenge you to become a Certified Property and Casualty Underwriter."

The Spoken Boss

• The boss would secretly tell an instructor or student about upcoming projects. The instructor or student would then ask one of the staff about the project. When we professed ignorance, we would check with the boss. The boss would become incensed that the secret had slipped.

• Her best shot was when she gave me the task of planning a transition for a project, about which I knew nothing, being handed off to me from a consultant. I've been given strange assignments before, but that took the cake. How the heck was I supposed to know what I was supposed to know?

• I was hired as an analyst but did programming work when needed. The boss wrote me up for failing to meet the minimum standards required to be a programmer. If he wanted me to be a programmer instead of an analyst, he should at least have said, "Here is the applicable job description."

The Abuser

• The boss looked at me and shouted, "I don't care what your [expletive] job title is or what they [exple-

tive] told you when you were hired. You'll do what I [expletive] tell you to do, the [expletive] way I tell you to do it, and if you don't like it, there's the [expletive] door." I had my résumé out the very next day.

• Naturally, my cubicle had to be across from his. When folks would come to my cubicle and look across at his cubicle, they would ask if that was dirty underwear on the floor. It was. There were also containers of rotting food stacked around his desk. This wasn't a problem for him; he couldn't smell. Add in the fact that he asked me to clean up his cubicle, and you have a special boss.

The Compulsive

• My work area was a 2-foot section of an 8-foot worktable in a narrow room, which I shared with seven other people and a remote printer. The room had formerly been a supply closet.

• The programmers compile on 400-MHz machines. The owner won't buy software to back up the servers; if they die, all the code will be lost. He signed up for a service contract on the phone system that had three years free. Then he wouldn't pay for the next three years. We can't get service on that

and Hell

phone system, so he bought another PC-based one. But to use it would require rewiring the building. He won't hire a contractor to do the wiring because it costs too much. My last day is Tuesday.

• The boss had problems letting me go to free seminars. I wasn't allowed to call long distance on company business. I had to communicate with letters and faxes.

The Tacitless Boss

• The project manager began a meeting on an important project by saying, "There are going to be some dead bodies before this is over."

• My boss called me into his office for a confidential progress report about a problematic new hire in my group. I gave him an unvarnished report of the problems with the new hire. Immediately after I left his office, he called in the new hire and fired him. When the new hire left the boss's office, he came over to me and screamed, "You got me fired," and stormed out. No one came near me after that.

• The manager explained that in a few months, there would be a 13% pay adjustment for those of us who had been there a couple of years. A couple of months later, my super-

visor said I had been given a special pay raise of 8%. He was surprised that I seemed disappointed. The manager explained that he had spoken too soon.

BOSSSES FROM HEAVEN

The Monitor

• **Bill Weinert** at First Data Merchant Services Corp. in Hagerstown, Md., realizes the importance of recognizing and rewarding employees and encourages education and self-improvement. He is a mentor to all who have the opportunity to work with or for him. I expect never to encounter anyone like him again in my entire working career.

The Compassionate Boss

• Soon after coming to work for **Miles Ammeroth**, a staff director at FDX Corp. (Federal Express' parent company in Memphis), my mother went into intensive care. Miles let me work odd hours and come and go often to fit the short visiting time periods at the intensive care unit. That was almost 10 years ago, and I am still with him.

• I have worked for **David Chaudhry** at Rutgers University for the past 13 years. Having a boss that will help you out in times of

need has unified our team in a way that no other organization could come close to matching. Our data processing department has not had a person leave since I came on board.

• Two months after I was hired, my wife and I had a premature baby boy. "You need to take a long lunch hour and go to the hospital," my boss said. "You take care of your wife and kid. That's more important!" — he jerked a hand toward the papers on his desk — "than this crap. Well, this isn't crap, but you know what I mean."

The Boss Who Trusts You

• My boss is **Piero DiMatteo** at Los Angeles Air Force Base. He believes that if you carry out your assignments on time, there will be no problems. If you get stuck, he's there to guide you.

• The company I work for, **Orcom Solutions Inc.** in Bend, Ore., has made the list of top 10 businesses in Oregon for the past five years.

Dave Peters treats me like a manager, though my job is team leader. It feels good to come to work.

• **Mike Farvetti** at IBM trusted us to do our jobs and held us accountable for the aggressive deliverable dates we set for ourselves. He was re-

PHOTO BY JEFFREY M. HARRIS



warded with a production level from his development staff that I have yet to see anywhere else.

• I report to **Kath Coleman**, chief financial officer at NetGenics Inc., a software start-up company based in Cleveland. Everyone here works as a team. There are no brick walls between departments. In all my 20 years in IT, I have never come across a company like this that allows me to use my judgment in making IT infrastructure changes.

The Great Communicator

• I had a rocky start when I first arrived into the group. But my boss and I were able to work past our differences. Our boss openly solicits our suggestions and carries on open and effective communication with the group. He's one of the best bosses I've had in my

14-year IT career.

• **Rudy Gragnani**, then of The Coca-Cola Co. bottler in Richmond, Va., displayed true leadership for me. A user, an expressive New Yorker, and I were loudly discussing a problem when Rudy walked by. Later, he chewed me out for yelling at my user. But at the next management meeting, the New Yorker expressed his thanks to me. Rudy understood that what he saw as an argument was just New York style. He apologized to me for misreading the situation and forwarded the thanks from the accounting area for my efforts.

The Boss Who Gives You Interesting Work

• I went to work for a manager who was one of the sharpest people I had ever worked for. And the applications we worked on were some of the most intel-

ligently constructed, flexible, reusable, modular applications I had ever seen. And it was a fantastic environment for me to learn in. Eventually, we were married. But due to nepotism rules, we both had to change jobs within the company.

• **Tim Jenson** at Syntel Inc. USA in New Castle, Del., believes that employees should be given choices and freedom to grow into the roles they love. He is one in a million.

Bosses Who Fight For You

• **Carla Howard** at IBM got everyone in my department a raise, even though we were all contractors. When the contract agency refused to pony up the money, Carla found a new contract agency that did. ■

Fraser is a freelance writer in Santa Cruz, Calif.

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Five years ago, a ballroom full of pioneers and enthusiasts gathered to discuss the hot new concept of knowledge management. Today, those disillusioned pioneers have a pointed message: Learning's great, knowledge is useful, but . . . PLEASE DON'T CALL IT

KNOWLEDGE MANAGEMENT!

BY ROCHELLE BARNER

FIVE YEARS AGO, Ernst & Young LLP sponsored one of the first conferences on knowledge management. Its purpose: to present "a business perspective on knowledge as a strategic resource and competitive asset." This was heady stuff, and it attracted high-level attendees from practically every industry, eager to hear the pioneers in the field of knowledge management.

But although knowledge management remains one of the hottest buzz phrases in the business world, it's also among the most nebulous. Blame an amazing array of software — from search-and-retrieval tools to decision-support systems, data mining, data visualization, intelligent search agents and "push" technology — that's being touted for knowledge management.

Adding injury to insult, knowledge management definitions have a tendency toward the abstract, although it comes down to somehow making unspoken knowledge explicit.

All of which helps explain the results of an annual survey by Boston-based consulting firm Bain & Co., which measured executive satisfaction with 25 management techniques. In both 1998 and 1999, knowledge management ranked at or near the bottom in every category. The bloom is fading off the

knowledge-management rose.

So how do those early pioneers at the Ernst & Young conference feel about knowledge management now?

"I have no interest in knowledge management, but in knowledge use," says Vincent Barabba, general manager of corporate strategy and knowledge development at General Motors Corp. in Detroit.

Barabba freely acknowledges that he's no fan of knowledge management, despite being a speaker at that early conference. His topic? "Integrating GM Knowledge into GM Decision-Making."

But Barabba says he's still as interested — and active — in ways to appropriately apply knowledge within General Motors, hence his title.

"My job is to make sure our senior management have the knowledge resources they need to make strategic decisions," he says. "I'm disenfranchised with the idea of knowledge management — as if you could actually manage what people need to know in a world that's constantly changing."

It's a theme echoed by several people who were also presenters at the Ernst & Young conference. Many remain in corporate America, while others joined the ranks of consultants who explore new ways to put knowledge to work. But regardless of what they've done in the past five years, nearly all agree that the exploration of organizational knowl-



I know a lot of business folks will say they thought their results would have been a lot more wonderful . . . but that knowledge management didn't deliver on the promise.

JANE C. LINDER,
ANDERSEN CONSULTING

edge holds real merit. They also agree on something else: Translating theory into practice has proved a lot harder than anyone imagined.

"I know a lot of business folks will say they thought their results would have been a lot more wonderful," says Jane C. Linder, who was senior manager at Polaroid Corp.'s New Business Concepts Center when she spoke at the conference. "Some will say they made modest gains but that knowledge management didn't deliver on the promise. I say knowledge management practice has been an essential foundation for learning how to use knowledge. Of course, if we all knew when we started that this would be just a foundation, we never would have gotten the money we did for our projects."

Linder is eager to build on that foundation. She's now a research fellow at Andersen Consulting's Institute for Strategic Change in Wellesley, Mass., studying how organizations can use information design to transform data into something usable.

"Why am I still focused on knowledge? It's just so wonderful and surprising when you see sense, when you see insight out of something that was a mess," she says. "And finding a way to provide clarity like that in a business setting, so that people can do something with it, is just so exciting. The joy for me is understanding a pattern that's



VINCENT BARABBA,
GENERAL MOTORS CORP.

been hidden — to take knowledge beyond availability and into a form that can be acted upon."

If it sounds a tad esoteric, that's because of the nature of discussions that revolve around something that can't be felt, seen or touched. It's why many knowledge management pioneers say it behooves us to get a few things straight about the topic.

First, they say, knowledge management isn't a technology or even a discipline (despite what some consultants might say). Instead, it's only a perspective for implementing, organizational change, which gets people to record knowledge (as opposed to data) and then share it. In other words, think of knowledge management as a form of change theory.

"I absolutely agree that this isn't about managing knowledge. It's about creating an environment where formal and informal learning can take place," says Chuck Benzoni, the partner in charge of Ernst & Young's knowledge and learning solutions group. "That's one reason we don't call it knowledge management anymore. The big challenge is how to change people's behavior to make their knowledge assets available to others."

"There's nothing approaching a cookbook or a methodology and that's the nature of the beast," says Robert Walker, former CIO at Hewlett-Packard

Co., and now vice president and chief financial officer at a yet-to-be-named Hewlett-Packard spin-off. "It's best not to view knowledge management as a discipline so much as a perspective — a way of viewing situations for promoting the flow of knowledge to the people who need it."

That's how Barabba views it. And it's how he's implemented knowledge efforts within GM. But don't call them projects — that word connotes something with a beginning, a middle and an end. At GM, the focus is on organizational behavior: how people use knowledge to make decisions and how they learn and adapt by learning.

"Take the concept that one of the true ways of learning is by your mistakes," Barabba says. "That means you tell someone, 'I value what you've learned from your mistakes, as much as I value when you've made a right decision.' That's why we at GM spend a lot of time capturing what we've learned from our mistakes."

The concept includes requiring people to write down why they've made a decision and the range of outcomes they expect; then they go back and see how everything turned out. If the outcome wasn't expected, the ideal is to record why.

"That's incredibly valuable. And that's what we've been working on for more than three years in different parts

of the company," Barabba says. "But it's hard for decision-makers to keep those records and their assumptions. So we are training people how to support a decision team."

In other words, the aim is to make sure the appropriate knowledge flows to those who need it.

"In many ways, what we are interested in is the harder stuff, of conveying tacit knowledge rather than explicit knowledge," Walker says.

One thing that's emerged in my thinking is we won't turn all that corporate data into some knowledge that's in some 'place.' It doesn't come out of our heads that well. Instead, we are looking at ways to most effectively link people together, to find one another," he says.

"These are really tough issues, and it doesn't surprise me that people are going back and exploring this with applied and basic research," Walker says. "We have the perspectives, but there's not much substance on the topic. It was too soon for consultancies to build practices on."

It's not likely that many consultants agree with Walker's opinion on offering knowledge management practices. But pioneering consultants do agree that the field needs some deep thought on conveying knowledge within a corporation. That's what Linder is exploring at the Andersson Institute, and it's what Larry Prusak is doing at IBM, where

I'm disenthralled with the idea of knowledge management — as if you could actually manage what people need to know in a world that's constantly changing.

he's executive director of IBM's Institute for Knowledge Management in Cambridge, Mass.

Both institutes are akin to think tanks where, like scientists dissecting an atom, people are engaged in both basic and applied research. "There's also a huge philosophical component with questions on how does one value knowledge? Measure its worth? Define its contribution to productivity?" says Prusak, a former principal at Ernst & Young's Center for Business Innovation, where he put together the 1994 conference.

"We need to do the basic and applied research that no one knew how to do — so we know how to answer the substantive questions around knowledge management," he says.

Prusak has seen or been directly involved in 200 knowledge management projects during the past seven years, and he's developed some very deep thoughts on the topic.

"It's a mistake to use some false quantification, like an internal rate of return, on knowledge," Prusak says. "No one can measure knowledge — you can only measure knowledge outcomes, like customer retention, patents and innovative work practices."

"A lot of companies put in access to a great deal of information, call it knowledge management and call it done," he says. "But access to knowledge does not equal value."

"Knowledge management does have an air of academia to it; some may say it has an air of distraction. But it is substantial," Prusak says.

That last sentiment is one with which nearly all early knowledge pioneers agree. It's just that, as a topic, knowledge management still requires some hard work before it translates into something that can be easily taught, shared or practiced. ■

Garner is a freelance writer in San Carlos, Calif. Contact her at rgarner@pacbell.net.

The Search for Productivity

The old ways of measuring productivity don't work; an Information Age replacement is desperately needed. In this excerpt from his new book, **Information Productivity**, *Computerworld* columnist Paul A. Strassmann suggests an approach every executive should add to his tool kit: Measure the economic value produced by information



TODAY, WE CAN observe a change that in every respect is as dramatic as anything that took place when the Industrial Era was born. During the transition from an order based on land ownership to economies based on capital ownership, many old institutions remained in place that marked the transformation. The measures of productivity are similar relics.

U.S. companies only rarely report about productivity, even though it's frequently touted as one of the firm's objectives. Conventional accounting is more concerned with the interests of the holders of debt than with the concerns of those who would like to understand how the company could grow and prosper.

Rare attempts to report on productivity, such as *Forbes* magazine's annual ranking of U.S. corporations, measure it in terms of sales per employee. Revenue-

and profit-per-employee ratios are not only inconclusive but also usually invalid and misleading for making productivity comparisons. For instance, in one mature industry — food processing — the sales per employee for 25 firms range from a high of \$745,000 to a low of \$56,300. Does this suggest that the highest-ranking firm is more than 13 times more productive than the lowest-ranking firm? That's not the case, since the company with the high sales per employee deploys 10 times more assets per employee, pays its employees higher salaries and purchases most of its packaging and transportation services from others.

The most frequently quoted indicators for assessing corporate productivity rely primarily on capital asset ratios such as return on assets, return on investment or return on equity. The capital-based approach to evaluating the productivity of firms is fundamentally flawed for the following reasons:

Capital is no longer the most important economic input for a modern industrial corporation to function. The typical U.S. industrial corporation ceased to be a capital-intensive enterprise more than 50 years ago. Only 130 of the 1,605 "major" U.S. industrial corporations, or 8.1% of all corporations, had costs of capital ownership greater than their costs of information management. These were mostly primary metal producers.

Capital has become a commodity instead of a scarce resource. It is readily available for a price that is commensurate with risk.

The most important assets of a corporation are the people who sustain it and the relationships they develop both internally and externally. To compare the effectiveness of firms requires productivity metrics that consider all of the variables which influence the ability to create shareholder wealth. True increases in productivity are the result of an effective combination of many factors of production, including land, labor, capital and information. Taking any one input factor in isolation, such as revenue per employee or IT per revenue, to explain productivity will always be misleading.

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- How does one track gains from investments resulting from changes in management processes and increased employee training?
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- Which indicators support motivation to make the right choices and hence, that could be used for bonuses, stock options and other financial incentives?

Measuring Information Productivity

The computation of information productivity depends on getting the costs of information approximately right. My definition of information cost is very broad. It includes all costs of managing, coordinating, training, communicating, planning, accounting,

marketing and research. Unless an activity is clearly a direct expense associated with delivering a product or service to a paying customer, it will be classified as an information expense.

Activity-based costing methods are particularly useful in separating cost elements that are directly related to the production of customer value from those that are engaged in coordination and support. My approach to determining information inputs is to first account for all the costs of delivering goods and services to customers. All remaining costs are "overhead" costs that I define as the costs of information management. Such information management costs would include all costs of internal coordination such as personnel, financial and marketing expenses. Information management also includes the costs of training, employee meetings and all IT costs that are not included in the cost of goods sold.

By this definition, the costs of information management also include the costs of maintaining external relationships such as marketing, advertising, purchasing, government relations, regulatory compliance and all costs incurred in creating better relationships with suppliers and customers.

To come up with an estimate of the costs of information management, the data compiled by stock market analyst research services is of great value. The data is obtained from corporate filings with the Securities and Exchange

Commission as well as from published annual reports. Such data has the advantage in that it is audited, available quarterly and always subject to public scrutiny by investors, analysts and shareholders. In this respect, such data is far superior to productivity estimates available from government sources, which depend on data aggregations and surveys.

With more than 12,000 firms in my database, it is then possible to calculate the information productivity of individual firms as follows:

$$\text{Information Productivity} = \frac{\text{Output}}{\text{Input}}$$

(Output equals economic value-added; and input equals the cost of information management, which is sales, general and administrative costs plus research and development costs)

"Information productivity" yields a conservative estimate for the purpose of relative ranking and benchmarking comparisons. Published financial reports are likely to understate the total cost of information. This happens whenever overhead is absorbed in the cost of goods sold or in the cost of purchases.

The purpose of information productivity analysis is to shift attention from IT itself to the effectiveness of the executives who manage it. The key to obtaining business value from computers lies in linking the uses of the technology to business plans. This connection must be explicit by showing how it overcomes existing business problems and how it contributes to future gains.

We have to evaluate the contributions of information technologies in terms of their effects on increasing the ratio of management value-added to management costs, which is how we define information productivity. If information productivity increases as a result of effective deployment of information technologies, that would be one of the indicators whether one's computers are producing a business payoff. Focusing on information productivity rather than on IT will lead to the following improved practices:

- Correctly diagnosing conditions that will improve information productivity before making an attempt to reengineer, re-engineer or automate.
- Making management more productive before adding electronic means, by first finding what impairs their business performance.

PHIL A. STRASSMANN: A company must judge its IT on its impact on long-term gains in information productivity and its ability to produce information that delivers greater economic value than chief competitors do

Glossary

Economic value-added: Profits after taxes minus payment for shareholder capital (defined as shareholder equity plus accumulated reserves).

Activity-based costing: An accounting method that assigns costs to activities rather than products or services. This enables resources and overhead costs to be more accurately assigned to the products and services that consume them. (For more on activity-based costing, see the next page, *Business QuickStudy*.)

Return on assets (ROA): Profits divided by the assets employed.

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If chief information officers are to acquire the influence implied by their title, they must shift attention from information technology to information management. In fact, they may have no choice in this matter since the payoffs from IT can be assessed only in terms of how it affects economic value-added (which is not the same as corporate profits) as well as information management. These two variables just happen to define information productivity. A firm's information technologies must first be judged in terms of their demonstrable impact on long-term gains in information productivity, as well as in delivering higher levels of information productivity than their principal competitors. ■

Strassmann's Information Productivity — Assessing the Information Management Costs of U.S. Industrial Corporations (The Information Economics Press, New Canaan, Conn., 168 pages, \$49, paperback) is available at www.strassmann.com/ieip/ieip.html. The book includes information productivity rankings and ratios for 1,560 firms, including a list of 400 firms with superior information productivity performance. Strassmann can be reached at his Web site, www.strassmann.com.



The Search for Productivity

The old ways of measuring productivity don't work: an Information Age replacement is desperately needed. In this excerpt from his new book, **Information Productivity**, *Computerworld* columnist Paul A. Strassmann suggests an approach every executive should add to his tool kit: Measure the economic value produced by information



TODAY WE CAN observe a change that in every respect is as dramatic as anything that took place when the Industrial Era was born. During the transition from an order based on land ownership to economies based on capital ownership, many old institutions remained in place that masked the transformation. The measures of productivity are similar relics.

U.S. companies only rarely report about productivity, even though it's frequently touted as one of the firm's objectives. Conventional accounting is more concerned with the interests of the holders of debt than with the concerns of those who would like to understand how the company could grow and prosper.

Rare attempts to report on productivity, such as *Forbes* magazine's annual ranking of U.S. corporations, measure it in terms of sales per employee. Revenue-

and profit-per-employee ratios are not only inconclusive but also usually invalid and misleading for making productivity comparisons. For instance, in one mature industry — food processing — the sales per employee for 25 firms range from a high of \$745,000 to a low of \$86,800. Does this suggest that the highest-ranking firm is more than 17 times more productive than the lowest-ranking firm? That's not the case, since the company with the high sales per employee deploys 10 times more assets per employee, pays its employees higher salaries, and purchases most of its packaging and transportation services from others.

The most frequently quoted indicators for assessing corporate productivity rely primarily on capital asset ratios such as return on assets, return on investment or return on equity. The capital-based approach to evaluating the productivity of firms is fundamentally flawed for the following reasons:

Capital is no longer the most important economic input for a modern industrial corporation to function. The typical U.S. industrial corporation ceased to be a capital-intensive enterprise more than 50 years ago. Only 130 of the 1,605 "major" U.S. industrial corporations, or 8.1% of all corporations, had costs of capital ownership greater than their costs of information management. These were mostly primary metal producers.

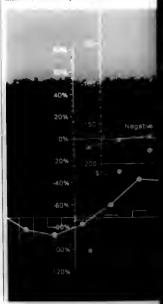
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Activity-Based Costing

BY JOYCE CHUTCHIAN-FERRANTI

UNDERSTANDING your ABCs can give you a better understanding of your company's business processes and underlying expenses.

Activity-based costing (ABC) is a budgeting and analysis process that evaluates overhead and operating expenses by linking costs to customers, services, products and orders. It allows managers to see which products or services are profitable or losing money.

The Process

Here's how it works: A company evaluates the resources, processes and money required to produce a product or service.

The first step is to establish the activity centers and activities. For example, in a large company, the IT department's help desk can be an activity center. The ABC team must identify all the events or activities within the help desk. A help desk activity can be anything from installing software to routing a call to the appropriate IT staffer who can assist the user with solving his system problems.

Once the activities are established, you must determine the parts of each activity that cost money. These can be hidden details that may be taken for granted, such as the cost associated with each call to the help desk. The key is to determine what makes up fixed costs, such as the cost of a telephone, and variable costs, such as the cost of each phone call.

There are many hidden costs managers must take into account.

For example, technology has replaced many human labor costs. A voice-mail system can replace a human, but you still have to examine the hidden costs associated with maintaining the service.

Once the cost drivers and activities are established, the data is collected and input to an application. The software can be a simple database, off-the-shelf ABC software or customized software.

DEFINITION

Activity-based costing is a costing model that identifies the cost pools, or activity centers, in an organization and assigns costs to products and services (cost drivers) based on the number of events or transactions involved in the process of providing a product or service.

From there, managers can determine what changes need to be made to give a company optimal profitability. This is called activity-based management — the process of using ABC to analyze how efficiently activities are performed and how to manage them.

"It's important that IT people understand the true nature

of their costs," says Charlie Johnson, principal of CNJohnson & Associates, a financial and systems consulting firm in Phelan, Calif. "This is especially important when they are talking about the costs associated with their clients. [ABC] allows them to be co-managers with the business and understand how these costs affect

the overall business."

ABC implementation can take from six to 12 months, depending on the scale. The Institute of Management Accountants (IMA) in Montvale, N.J., recommends starting with a pilot study to see on a smaller scale what can happen in the larger scheme of things.

"It's best to take your most

difficult or expensive department and, in the initial reviewing stage, find out things that would be helpful without even crunching numbers," says Catherine Stanke, managing director of finance and administration at the IMA. "In a pilot, you'll get some easy successes. If you don't see a difference in your costs, you haven't been successful."

A pilot program is a helpful way of getting support from upper management. Management support is vital in implementing ABC because the process requires input and resources from different departments.

Form a Team

The key to implementing ABC is to have a cross-functional team that includes representatives from IT, finance and the people who own the processes (such as human resources, sales or operations). It's also helpful to have a consultant who can give an objective view and guide the process.

"ABC is not an accounting tool — it's a management information tool," says Jim Gurewicz, director of Focused Management Information Inc., an Oakville, Ontario-based training and consulting firm that specializes in cost management and measurement strategies. "It brings cost information out of the accounting department and into the hands of people that make decisions for an organization."

As IT becomes more prevalent in the business arena, it's important to be involved from the beginning.

"IT is becoming, by far, one of the biggest costs of organizations," says Bob Wharum, a partner at Perform Consulting, a management consulting firm in Phoenix. ABC helps IT managers make sure we're more effectively spending a huge amount of money."

Chutchan-Ferranti is a freelance writer in Concord, Mass.

MORE ONLINE

For more information on activity-based costing, visit our Web site: www.computerworld.com/news

Related ABC Terms

ACTIVITY: Any event or transaction that causes a cost to be incurred in an organization.

ACTIVITY CENTER: A collection of similar activities in one place.

COST DRIVER: A unit of output that's used to calculate the cost of each activity.

CUSTOMER: Identifying the cost of providing a product or service to a customer and billing the customer for that product or service.

ACTIVITY-BASED MANAGEMENT (ABM): The use of activity-based costing to help managers focus on the continuous improvement of operations and processes.

PROCESS VALUE ANALYSIS (PVA): A systematic approach to understanding the activities required to provide a product or service. PVA identifies all resource-consuming activities involved in producing the product or service and labels these activities as being either value-added or nonvalue-added in nature.

Are these business terms you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefano MicCasi at smiccasi@computerworld.com.

Hints For Implementing ABC

KEEP IT SIMPLE: When determining the cost of drivers for each activity, don't get bogged down with too many granular details that can't be explained. However, a system that is too general may not be accurate enough.

TRAIN CUSTOMERS IN ADVANCE: Customers, whether internal or external, need to be prepared for the changes to come. Educate customers to prepare them before you start the implementation process.

MAKE A BALANCED TEAM: Get input from all parties involved: finance staff, IT staff, human resources and consultants.

START WITH A PILOT STUDY: Start with your worst department, where you'll be sure to have some successes. You'll be able to get faster buy-in from upper management if you can quickly point to cost savings.

PERSEVERE MANAGEMENT TO CHANGE: ABC implementation must have the support of all levels in an organization. ABC requires a new way of thinking for all parties.

ESTABLISH A REASONABLE TIME FRAME: Six to 12 months is aggressive, but reasonable. Too much time will lose the momentum of the people involved. ABC and ABM can live on forever, but the initial implementation must be well planned.

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TECHNOLOGY

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When the man responsible for getting Microsoft's Windows 2000 out the door offers to personally migrate your laptop, how can you say no? Our reporter goes straight to the top for some tech support. **» 60**

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UNDER THE GUN

SHORT-STAFFED and in the middle of a reorganization, Karole Johns, desktop services director at Thomson Financial, had 10 weeks to get 1,000 laptops year 2000-compliant. Using a combination of baselining and manual remediation, her team got the job done. Managers helped decide which PCs to baseline. Though her team beat the clock, Johns acknowledges that "until the date is the date, you really won't know."

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Going to the Top for Help On Windows 2000 Migration

Jim Allchin upgrades reporter's laptop

BY SHARON GAUDIN

IF YOU NEED a helping hand, go to the top. That's my rule of thumb. I recently hit a troubling series of meetings during Microsoft Corp.'s annual reporter editor's conference. Jim Allchin, the Microsoft executive ultimately responsible for getting Windows 2000 out the door, polled reporters on how many were running Windows 2000 on their own systems. It was a sad show of hands, and mine was down.

He berated us for not being up-to-date and said that, heck, he'd install it himself if we wanted him to.

Everyone laughed. But I took him up on it.

Sure enough, I sat down with Allchin a week ago, and he upgraded my laptop.

12:40 p.m.: Allchin begins to

check out my system.

First, he goes over my BIOS chip. The PC's very brain stem, saying it needs to be as "virgin" as possible. "You have a Dell here, so go to the Dell Web site and make sure your hardware is compatible, and then it will tell you if the BIOS is at the right level," he says.

The Dell Web site recommends a higher BIOS, so Allchin upgrades it. The Setup Wizard then pops up, testing my hardware and software, and eventually comes back with an Upgrade Report. With about 25 applications loaded, I expect a long list of incompatibilities.

12:50: The report comes back. Norton AntiVirus, which was designed to work on Windows 9x, isn't compatible. To my surprise, that's it. All my other applications will run on Windows 2000. That doesn't



And He Should Know...

Here are some Windows 2000 installation tips from Microsoft's Jim Allchin.

- Check the BIOS — make sure you have the right version and that it's as clean as possible
- Check the hardware compatibility
- Check application compatibility
- Make sure you have more RAM than you think — you will need at least 64M bytes, install even more memory on your laptop to save your battery

necessarily mean they will take advantage of the new Active Directory, improved Kerberos security or other new features. But at least the laptop should run.

Lots of RAM

12:55: Allchin reboots and starts the installation.

While the install runs, we chat about what it will take to run Windows 2000 — in terms of hardware and software [News, Aug. 2].

"You want more RAM than

you think you'll need," says Allchin, noting that people need a minimum of 64M bytes. "The thing that will obsolete your machine faster than anything else is insufficient RAM."

He says, "Notice I didn't take any backups of your data? That's how confident I am."

Hey, I didn't noticed that. I'm not nearly as confident as he is — it's my PC.

"This is not going to be an [operating system] everyone installs in one day," Allchin says. "It's the easiest-to-use

system we've ever built. It's just going to be a slow installation with corporate accounts."

1:00: The install finishes; we power-cycle the system.

1:40: My PC reminds me that my antivirus software isn't running.

1:42: Windows 2000 is running. Complete.

2:00: My system is hooked to the Internet through a wireless connection.

But although my applications are up and running — we've checked several of them — they aren't using Active Directory. And the Kerberos security isn't in place.

For that, I'd have to wipe and load Windows 2000-certified applications. "Your data is in whatever directories it was in before," Allchin explains. "If you do a fresh install, we reorganize directories and where files sit in the disk. And when you load the applications new, they go to the right directories."

"You're getting a lot of benefit if it loaded as is, but, no, not the full benefit," he adds.

As we wrap up, I tease Allchin that I'm pleased with my new tech support guy. I ask if I can call if I have problems. "You can call," Allchin says. "And I'll connect you with someone else." ■

RUSSELL KAY COMMENTARY

Type for E-Books

MICROSOFT researcher Bill Hill recently gave me a look at just how good words can appear on a computer screen. The new technology, called ClearType, represents the biggest advance in the visual display of text since the graphical user interface let us display proportionally spaced letters.

Hold a printed page next to a computer screen and you'll see that the same font looks very different in the two media. The printed letters offer many important visual cues and subtleties that are lost on the computer screen. The culprit is the relatively low resolution used on-screen: 72 to 80 dots per inch, compared with a printer's 600 to 1,200 dots per inch. A monitor has

relatively few pixels to display 9- to 12-point type; the type sizes that are read by most people.

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A standard

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As good as ClearType is, what really excites me is Bill Hill's love for books and his passion to understand the reading process. He believes he can radically improve the electronic reading experience, and I'm betting that he will. ClearType is a remarkable achievement, and it's just the beginning. ■



RUSSELL KAY is Computerworld's reviews editor. You can contact him at russell_kay@computerworld.com.

Going to the Top for Help On Windows 2000 Migration

Jim Allchin upgrades reporter's laptop

BY SHARON BAUGHN

IF YOU NEED a helping hand, go to the top. That's my rule of thumb. I recently hit a daylong series of meetings during Microsoft Corp.'s annual reporter/editor schmooze event, Jim Allchin, the Microsoft executive ultimately responsible for getting Windows 2000 out the door, polled reporters on how many were running Windows 2000 on their own systems. It was a sad show of hands, and mine was down.

He bared us for not being up-to-date and said that, heck, he'd install it himself if we wanted him to.

Everyone laughed. But I took him up on it.

Sure enough, I sat down with Allchin a week ago, and he upgraded my laptop.

12:30 p.m.: Allchin begins to

check out my system.

First, he goes over my BIOS chip, the PC's very brain stem, saying it needs to be as "virgin" as possible. "You have a Dell here, so go to the Dell Web site and make sure your hardware is compatible, and then it will tell you if the BIOS is at the right level," he says.

The Dell Web site recommends a higher BIOS, so Allchin upgrades it. The Setup Wizard then pops up, testing my hardware and software, and eventually comes back with an Upgrade Report. With about 25 applications loaded, I expect a long list of incompatibilities.

12:35: The report comes back. Norton AntiVirus, which was designed to work on Windows 9x, isn't compatible. To my surprise, that's it. All my other applications will run on Windows 2000. That doesn't

Let's of RAM

- Check the BIOS — make sure you have the right version and that it's as clean as possible
- Check the hardware compatibility
- Check application compatibility
- Make sure you have more RAM than you think — you will need at least 64M bytes. Install even more memory on your laptop to save your battery

necessarily mean they will take advantage of the new Active Directory, improved Kerberos security or other new features. But at least the laptop should run.

Let's of RAM

12:35: Allchin reboots and starts the installation.

While the install runs, we chat about what it will take to run Windows 2000 — in terms of hardware and software [News, Aug. 2].

"You want more RAM than

you think you'll need," says Allchin, noting that people need a minimum of 64M bytes.

"The thing that will obsolete your machine faster than anything else is insufficient RAM."

He says, "Notice I didn't take any backups of your data? That's how confident I am."

Hey, I hadn't noticed that. I'm not nearly as confident as he is — it's my PC.

"This is not going to be an [operating system] everyone installs in one day," Allchin says. "It's the easiest-to-use

system we've ever built. It's just going to be a slow installation with corporate accounts."

1:05: The install finishes; we power-cycle the system.

1:40: My PC reminds me that my antivirus software isn't running.

1:42: Windows 2000 is running. Complete.

2:10: My system is hooked to the Internet through a wireless connection.

But although my applications are up and running — we've checked several of them — they aren't using Active Directory. And the Kerberos security isn't in place.

For that, I'd have to wipe and load Windows 2000-certified applications. "Your data is in whatever directories it was in before," Allchin explains. "If you do a fresh install, we reorganize directories and where files sit in the disk. And when you load the applications new, they go to the right directories."

"You're getting a lot of benefit with it loaded as is, but, no, not the full benefit," he adds.

As we wrap up, I tease Allchin that I'm pleased with my new tech support guy. I ask if I can call if I have problems.

"You can call," Allchin says. "And I'll connect you with someone else." ▀

RUSSELL KAY/COMMENTARY

Type for E-Books

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RUSSELL KAY is Computerworld's resident editor. You can contact him at russell_kay@computerworld.com.

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E-Business Opportunities

Companies that aggressively
—and judiciously—follow
the right formula stand to
prosper.

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With so many to choose
from, how can you get the
best?

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BrainStorm Group's SMARTsourcing SOLUTIONS GUIDE

THE OFFICIAL PUBLICATION OF THE
SMARTSOURCING CONFERENCE SERIES

Ian Hayes, President of Clarity Consulting, Inc.

THE BUSINESS OF E-BUSINESS



It seems that everyone has caught e-fever over the past year. Every company, product and service is either sprouting an "e" in front, or a ".com" in back of its name. Although the hype can become overbearing, there is good reason for the excitement. As new Internet upstarts rapidly overwhelm traditional companies, forward thinking companies are reinventing themselves to capitalize on new opportunities, and barriers to trade are collapsing in a newly border-less electronic world.

Although today's high-flier can quickly become tomorrow's also-ran, the potential for success is intoxicating, and investor confidence in this heady environment is reflected in the seemingly ludicrous market caps of companies perceived to be at the forefront of the e-business revolution.

The future may seem boundless, but in the short term a dangerous combination of opportunity, competition and investor pressure is causing companies to respond in a knee-jerk fashion. In virtually every industry category, CEOs feel obliged to hurry their companies into the electronic future. These headlong rushes frequently result in hastily designed web sites and half-hearted attempts at consumer e-commerce. Such ill-conceived forays into e-business may build the resumes of IT staff members, but they do little to help their companies become truly competitive in the Internet world.

Adapting to this world requires a change that is as fundamental and revolutionary as the arrival of the industrial age. Old models of a company's competence, organizational structure and job functions must be swept away. As examples, imagine a photography company facing the advent of digital cameras, or stockbrokers adapting to on-line trading.

Incremental actions are not enough. To survive and thrive in the next millennium, companies must rethink the way they serve and interact with their customers, employees, stockholders, suppliers and partners.

From product/service conception through manufacturing, support and delivery, they must be prepared to radically transform processes and organizational structures. Technology, while important, is only one component of a more significant transformation.

To support this transformation, companies are demanding unprecedented service and assistance from their solution providers. Purely technical solutions no longer suffice. What good is a flashy new web site without cutting-edge content, proper

promotion and a strong fit within the corporate business strategy? Building an on-line consumer sales function is technically simple; the tough part revolves around order fulfillment, customer support and, most importantly, deciding whether or not

consumer sales make sense in the first place.

Dealing with these issues requires business expertise and creative skills, as well as technical savvy. Providing a solution may require merging management consulting.

(Continued on next page)

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At PKS Information Services, we team with customers to bridge the gap between business strategy and information technology through quality people, proven methods, and advanced technologies. We believe today's IT managers and CIOs understand that challenges like Year 2000, euro conversion, and the IT staffing drought signal a lasting change in IT—one that requires new resourcing strategies. Our recommendation to our customers is to use smart sourcing—not only to overcome their short-term staffing needs, but as a key element of their long-term vision.

At PKS, we recommend classifying your application portfolio into three general categories that account for the emerging commodity nature of many technology services, as well as the changing relationship of IT to business objectives:

- **Critical/core business.** These activities represent the expression of the company's core competency, its strategic competitive advantage; capabilities that must remain unique to the company for the company to remain competitive.
- **Critical/non-core business.** These activities support critical business processes but reflect neither core competencies nor competitive differentiators.
- **Sustaining.** These activities, while important for sustaining business activities, are sufficiently stable and universal (e.g., data center operations, network support, hardware repair) to be treated on a commodity basis.

PKS' Legacy Renewal service. Using Legacy Renewal tools and techniques, PKS will work with your team to transform critical legacy applications and data to client/server or Internet-based equivalents at a fraction of the cost of redevelopment.

PKS' Package Implementation offering delivers everything you need to implement popular ERP packages from SAP and Oracle. We can assist your successful implementation more quickly and less expensively than competing approaches.

PKS' Application Maintenance Outsourcing service brings our talented resources to bear, managing your day-to-day maintenance and production activities, enabling you to reorient key resources toward more strategic activities for a fixed price.

We believe our approach to smart sourcing makes us a valuable partner for projects across your application portfolio. We can not only extend the value of your legacy investment, but also help you adapt your technology portfolio to encourage new business strategies—all while keeping costs manageable. Let us put our experience to work for you.

market research, ad agency capabilities, application development and business process outsourcing. The most successful solutions arise by reconciling a company's objectives with rapidly changing market realities.

A new wave of solution providers is arriving to serve the e-business market. At the same time, existing solution providers are extending and retooling their offerings to meet new market needs. The changing mix of skills within these firms reflects the blurring of traditional boundaries between IT and other company functions. Where a legacy COBOL application was designed, built and maintained by programmers with few business skills, a web application team relies more on marketers, graphic artists and copy writers than technicians. Many computer skills that were limited to specialists a few years ago are commonplace in today's technology-enabled generation. This integration of technology and business is also taking hold among management consultants. Business and technology strategy discussions cannot be separated in the e-business world.

Despite these changes, however, not all technology skills are being supplanted. Most valuable corporate data still resides in legacy systems. This data must be mined, managed and integrated into e-business applications—a job that requires strong traditional programming skills. Similarly, a complex technology architecture is required to support corporate e-business initiatives. This architecture must be planned, designed, implemented and maintained by highly skilled technologists, or its performance will become an impediment to e-business goals.

As skills have changed, so have sourcing models. As companies implement their new e-business strategy, they are choosing to SMARTsource many of its components. Companies that SMARTsource adopt a virtual company model in which they remain lean and nimble by outsourcing every function outside their core competence.

Even traditional companies are taking an expanded view of their corporate boundaries. Application and web site development and hosting is frequently contracted to specialists. Separate content providers and e-marketers are being used to keep sites fresh and build brand awareness. IT outsourcing are hired to integrate and

web-enable front-office and back-office applications as part of long-term maintenance and support agreements.

On a larger scale, companies rely on business process outsourcing for the end-to-end execution of portions of their e-business strategy. For example, a company may SMARTsource the entire operation of an e-commerce site. In addition to building and

maintaining the site, the outsourcer also handles customer support and order fulfillment. For its part, the company provides product and marketing resources. These outsourcing arrangements may include creative compensation models that discard traditional fee-for-service payment in favor of a percentage of site revenues.

The possibilities and permutations of e-business are

endless. With change occurring at a rapid-fire pace, success hinges on quickly exploiting new opportunities by devising a creative response and marshalling the proper resources. The e-business market rewards companies that follow this formula. It is to those companies and teams that we dedicate the SMARTsourcing conference. ■

Founder and President of Clarity Consulting, Inc., Ian Hayes specializes in strategic consulting on issues surrounding the management and support of corporate business systems. He has advised hundreds of companies on IT issues including insourcing, outsourcing and process improvement. He has co-authored two books on the Y2K software crisis. He can be reached at ian_hayes@compuserve.com

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SMARTsourcing

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"This top quality conference helped me develop an in-depth understanding with minimal time investment. Networking with fellow participants was also a great resource."

—Mike Makris
Pratt & Whitney
Chemical Systems

About BrainStorm Group

Based in Northboro, Massachusetts, BrainStorm Group, Inc. was founded in 1997 by Gregg V. Rock with the intent of establishing itself as the premier producer and developer of high technology conferences and events. In addition to the SMARTsourcing Conference, the YEAR 2000 National Symposium Series and the XML Leadership Series, BrainStorm Group offers a set of integrated services in the areas of proprietary conference development and the outsourcing of content development, sales, event marketing and management for the high technology marketplace.

Visit our web site
www.brainstorm-group.com
to hear audio overviews
from select presentations.

Gregg V. Rock
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BrainStorm Group's SMARTsourcing™ Conference Series is the industry's premier meeting place for senior business and IT management to evaluate their strategic sourcing options with the world's leading IT Outsourcing and E-Business services and solution providers.

The SMARTsourcing Conference is the only industry forum which provides business and IT executives with a clear analysis of the newest sourcing models, as well as strategies for selecting and implementing the optimum mix of these services within your organization. Our unique "open-industry" environment provides attendees with access to the industry's leading analysts, independent consultants, real world case studies, and invaluable networking opportunities.

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As organizations wrap up their Y2K preparations, thoughts quickly turn from survival to competition in the unglorious environment of an Internet-enabled world. Leading organizations from across the country and around the world have attended the SMARTsourcing Conference & Expo Series to lay the groundwork for their post-Y2K initiatives. Plan to attend SMARTsourcing in order to leverage the latest sourcing models for your organization.

The SMARTsourcing Conference Program features presentations from industry "thought leaders" on topics including: traditional IT Outsourcing services, Application Hosting services, E-Business services and more.

SMARTsourcing Solutions Guide

The official publication of BrainStorm Group's SMARTsourcing Conference Series. The first of this two-part series features insightful articles including:

- **Jon S. Hayes, President of Clarity Consulting and SMARTsourcing Co-Chairman** addresses the critical components necessary to create a successful E-Business strategy in his article "The Business of E-Business." Page S-2
- **Hurwitz Group's Bill Martorelli, Vice President of Application Resourcing Strategies**, provides insight on selecting the right strategic partner for your organization in "E-Business Outsourcing" Page S-6
- An overview of our upcoming conference programs can be found on the facing page. Visit our web site at www.brainstorm-group.com for complete conference agendas, list of presenters and audio overviews from select SMARTsourcing presentations.

Look for Part Two of this supplement series in the Sept. 13th issue of Computerworld!

Special Thanks

The SMARTsourcing Conference Series has become a reality thanks to the support of our Event, Media and Analyst Co-Sponsors, which you will find recognized throughout this Solutions Guide and our web site. Additional thanks goes to our presenters and Executive Advisory Board Members (see page S-5) whose expertise and insight has been integral in establishing the SMARTsourcing Conference Series as a must-attend forum for IT Sourcing professionals and practitioners.

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An Unparalleled Conference Program

BrainStorm Group has brought together the world's leading IT Outsourcing and E-Business experts to provide you with winning strategies for incorporating SMARTSourcing™ into your organization. No sales pitches, no fluff—just the information you need to make an informed decision. The SMARTSourcing Conference Series is committed to providing you with unbiased information on the latest sourcing options, trends, and developments.

Program Highlights

SMARTSourcing Strategies:

- ♦ Launching a Successful Engagement
- ♦ Gaining Business Advantage
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- ♦ Successful Pricing Strategies
- ♦ Services in a Changing World
- ♦ Creating Winning Service Level Agreements
- ♦ Ten Imperatives for Future Success as a CIO
- ♦ Realigning IT with Business Strategies
- ♦ Managing Offshore Relationships
- ♦ Creating Core Outsourcing Policy

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- ♦ Application Hosting and ASPs
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Case Studies

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Attendee Benefits

Our conference program will provide insight and education on the strategic advantages of SMARTSourcing, explore winning sourcing strategies, redefine antiquated images of "outsourcing", and present the business imperative for the strategic implementation of project sourcing as a way to leverage an organization's IT investment.

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- ♦ Conference Attendee List
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- ♦ Gain expert insight from industry "thought leaders" on the latest developments and advantages of IT Outsourcing.
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William Martorelli, Vice President of Hurwitz Group

E-BUSINESS OUTSOURCING

William Martorelli is Vice President, Application Reengineering Strategy for Hurwitz Group, Inc., an analyst firm specializing in strategic business applications. He has over 15 years experience analyzing and evaluating technology and marketing strategies for IT organizations in Fortune 500 companies, software product companies, and consulting firms. His background includes research, consulting, and commentary on the information technology field. Martorelli holds a B.S. from Northeastern University. His life is a frequent question on topics relating to systems integration, outsourcing, IT management and software development. His work has appeared in *InformationWeek*, *InformationWeek*, *InformationWeek*, *InformationWeek*, and *InformationWeek*.

Q: How is front end web development evolving in the area of outsourced e-business?

A: The ability of outside firms to create a web-oriented, e-business solution including creative, design, branding and implementation, is obviously very key to electronic business strategies. So those companies are playing an extremely important role in the electronic business strategies for many of their customers. These core competencies are being pursued by some of the larger, more established integration, even the big five companies.

Q: What trends do you see here?

A: There is definitely a trend toward multidisciplinary, integrated development teams that have creative design skills, implementation skills, and even strategy skills. In a single engagement team. This is being pursued simultaneously as opposed to sequentially.

Q: Are we talking about major consulting engagements when you bring in that kind of a team?

A: We're talking about a major effort. It doesn't necessarily have to be a huge engagement. In fact, the emphasis on web solutions is so focused on speed that what you're really looking for is rapid results. People who are pursuing e-business strategies have to have something up and running in months—maybe three or less. Consequently, part of the goal of the multidisciplinary approach is to deliver something that is well thought out in a very rapid fashion. People usually don't have two or three years to do this.

Q: What role does the customer play in this process?

A: The customer plays a very critical role in terms of partnering with these vendors. Normally, there is a pretty well

established set of responsibilities for the customer within a systems integration type of engagement of any kind. It varies depending on the nature of the engagement and the type of integrator that you are talking about. Many of these

small web consultancies are pursuing a fixed-rate model, which typically has very explicit responsibilities on the customer side. Customers play a very critical role, not only in terms of oversight but also bringing their people to bear so

they can agree on the scope of the proposed solution and help manage the engagement process.

Q: Some users might be put off by the great proliferation of web consulting companies. How do you protect yourself against

charlatans? How do you know who are hiring?

A: You have to do your due diligence. Check references, do all the kinds of things you do in a traditional systems integration engagement. Make sure that the rhetoric is backed

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Cognizant Technology Solutions Corporation is a leading applications outsourcing that provides software development and maintenance services for Fortune 1000 companies. Cognizant partners with its customers to handle full life-cycle application development projects, and takes full responsibility for on-going maintenance of client systems and legacy transformation. Cognizant's core competencies include legacy and client/server systems, web-centric applications, data warehousing and component-based development.

Cognizant employs more than 1,500 computer science and engineering professionals to successfully manage and solve its customers' software project challenges. Cognizant professionals based at the customer site work as a "virtual" team with their colleagues at Cognizant's software development centers in India, delivering cost-effective solutions within their customers' rigorous time frames.

To ensure that their work is of the highest quality, Cognizant utilizes its ISO 9001 certified QVew methodology to define and implement projects; and in December 1998, Cognizant became one of only 18 software engineering organizations worldwide to be assessed at SEI/CMM Level 4.

Using Cognizant facilities, customers can undertake additional projects without investing in new hardware or software and can parallel-process development phases to accelerate delivery.

Cognizant Technology Solutions Corporation is a subsidiary of IMS Health, the leading provider of information solutions to the pharmaceutical and healthcare industries worldwide. Global revenues in 1998 were \$58.6 million. Originally formed in 1994 as the in-house technology development center for The Dun & Bradstreet Corporation, the company was named Cognizant Technology Solutions in 1996, when Dun & Bradstreet formed the Cognizant Corporation to provide insight into three fast-growing sectors: healthcare, media and technology. With the continued growth of these sectors, Cognizant Technology Solutions made an initial public offering in June 1998 (NASDAQ:CTSH). In July 1998, Cognizant Corporation evolved into two separate entities: Nielsen Media Research and IMS Health. IMS Health retains a controlling interest in Cognizant Technology Solutions.

Headquartered in Teaneck, New Jersey, Cognizant Technology Solutions now has seven offshore software development centers in Madras (4), Calcutta (2), and Pune (1), India. Cognizant also has sales and business development offices located in Chicago, San Francisco, Toronto, Canada and London, England.



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Computer Horizons Corp. is a strategic IT services supplier with over 4,000 billable consultants and 55 offices worldwide. The company enables its Global 1000 customer base to realize competitive advantages through enterprise application solutions, e-business, customized Web development and Web enablement of strategic application portfolios. Specific offerings include Customer Relationship Management (CRM), e-business, network services, ERP, strategic outsourcing and managed resourcing, as well as a best-of-breed selection of software and relational database products.

Computer Horizons offers an integrated "Market Leadership" approach to transforming its clients into the modern e-business world. The approach combines our various talents of our Strategic Emerging Practices organization, i.e.: CRM, e-business, ERP, Outsourcing, and Managed Resourcing. CHC solutions are designed with combined synergy to provide total integrated solutions that enable clients to gain competitive and operating advantage.

CHC's integrated framework approach sponsors a full life cycle methodology with multiple entry/exit points, reflecting our commitment to respond to the needs of our clients. The solution offerings uniquely combine best-in-class products, proven processes, and tested project management practices supported by skilled technical resources providing a full range of consulting services that covers: Strategy, Architecture, Engineering and Design, Implementation and Operations.

With the understanding of information technology and the contemporary information management system, Computer Horizons has built a very strong set of service offerings, designed to meet the needs of large business organizations, now and into the future. These offerings have been successfully marketed to the world's largest financial institution, the world's largest insurance company and the world's largest telecommunications service provider.

Businesses around the world are facing more obstacles than ever before. To succeed in this new business climate, companies should bolster their strengths, and focus resources on core competencies to ensure increased shareholder value. Conversely, companies should ensure decentralized and mission critical operations—such as information technology—to business partners with the expertise and experience to upgrade and maintain functions into the future.

As one of the country's foremost diversified information technology companies, Computer Horizons, led by a management team dedicated to client-driven objectives, has been serving as that kind of business partner both devising solutions and implementing them since 1969.

up by reality, that in fact adequate methodologies and process management disciplines are in place. Ultimately in services, it comes down to people. You have to make sure that all the people that are going to be brought in on your engagement are going to be effective for you. There is a lot of choice now in the form of these new web-oriented consultancies. By the same token, the demand is quite significant. It's not really a price competition.

Q: Are Big 5 companies retrofitting themselves to play in this market?

A: Absolutely. They are moving very, very aggressively in the e-business space, because they recognize that this is the most significant opportunity currently facing them in the wake of the slowdown in the ERP world, which, along with Y2K, has been their primary engine of growth in recent years. There is no question that e-business has become a very, very significant priority in a relatively short time frame at places like PriceWaterhouseCoopers, and Andersen Consulting. Certainly KPMG has had an electronic business practice of some note for some time.

Q: What does e-business outsourcing entail?

A: There is the legendary \$50,000 web design job that everybody in the integration business wants to get away from. That kind of thing would not have a lot of the heavy, creative design, heavy branding experience, as well as usability that is increasingly becoming part of these web-oriented engagements. With the addition of those types of capabilities, the price goes very significantly. You're talking in the hundreds of thousands, if not the millions of dollars currently. You think about the front end, but what happens as you go from to back in terms of heavy day integration with back end legacy systems, ERP systems, customer relationship management systems, enterprise application integration and the like? It takes a lot to comprise a robust e-business solution as opposed to a simple e-commerce solution, which by in large the whole industry has outgrown.

Q: If you are a large company, how can you decide whether

it makes sense to do this kind of integration internally without outside help?

A: It hinges on some of the traditional decisions. Do you feel you have the ability to do it yourself in terms of skills, in terms of organiza-

tional readiness for change? Do you believe the e-business is going to represent a core competency for your company going forward? I think that over time, people are recognizing that they are getting pinched between the need to simultane-

ously have rapid time to market, new skills, the ability to deal with the tremendous complexity presented by the e-business technologies, and the need for organizational transformation. Those issues tend to convince people that they need to

go outside, at least for something. Look how well established web hosting is, as well as other discrete forms of e-business outsourcing, so certainly, you have to go outside for a part of it, and maybe a large part of it. ■

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BFL Software believes in building lasting relationships with its customers to provide quality software services as effectively as possible.

For more information, see our web site at www.bflsoftware.com



Kanbay

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Kanbay Incorporated is an information technology consulting firm with offices around the globe. We listen, learn, then co-create legacy-to-web business technology solutions. Kanbay solves client problems through a durable global infrastructure, powerful methodologies, and a people-focused culture. We deliver profitable results that accelerate our clients' competitive advantage.

According to founding partner and CEO Raymond Spencer, "Kanbay grew from under \$10 million in revenue in 1995 to \$36 million in 1998 and now employs more than 800 people worldwide." The management team consists of advanced technology experts with extensive experience in the US, EU, and Asia.

Kanbay Service Offerings

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Kanbay works with clients to define their E-Business strategy, then implement interactive solutions that enable them to redefine their relationships with customers, suppliers, and employees.

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Information Technology (IT) Development and Outsourcing enhances efficiency while facilitating the coexistence of legacy and emerging technologies. These services encompass development; customization and personalization; integration; production support; maintenance; and reengineering.

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Enterprise Systems Implementation services and applications support four main business constituencies: suppliers, operational departments, service departments, and customers. Kanbay has experience with many types of packaged business solutions, but focuses on—SAP HR, Oracle and Peoplesoft.

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Kanbay works with clients to formulate strategies that enable them to thrive and evolve in a rapidly changing world. We focus on aligning corporate strategy with operational initiatives, innovative business processes and the utilization of enabling technologies to empower the business units and people to become more effective.

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BRIEFS

Hitachi's NanoCopy

Hitachi Data Systems has announced Freedom Storage NanoCopy, designed to copy data between primary subsystems and secondary subsystems. The copies may be of any type or amount of data and may be recorded on sub-systems anywhere in the world. Freedom Storage NanoCopy is set to ship in the fourth quarter for S/390-compatible processors.

Santa Clara, Calif.-based Hitachi Data Systems plans to release Unix and Windows NT versions next year. The product will be offered as part of a software suite. Pricing will start at about \$50,000 per sub-system. www.hds.com

Unisys to Resell D6

Unisys Corp. plans to offer Data Storage Corp.'s Clarion PC 5000 Series line of Fibre-Channel storage products with the Unisys Aquante line of high-availability Windows NT Servers. Blue Bell, Pa.-based Unisys will also resell D6's Clarion Mapshare storage management software suite. www.unisys.com

Ination Drive

Ination Corp. this month will ship a Universal Serial Bus (USB) Super-Disk drive for PCs and Macintoshes. The portable drive is read/write-compatible with standard floppy and 120M-byte SuperDisk diskettes. It reads data up to 22 times faster than a floppy drive and works with any computer with a USB port, said the Oakdale, Minn., company. The drive costs \$269.99. www.superdisk.com

SNAPSHOT

Who Writes the Check?

How was your handheld PC purchased?



Based on survey of 550 corporate users of handheld PCs

SOURCE: COMPUTERWORLD'S IT INTELLIGENCE UNIT/FRANZBLAU ASSOCIATES

Master Plan Gets PCs Y2K Ready

Desktop manager's mix of approaches gets the job done

BY BAEI LAH
ROCKVILLE, MD

IT'S MAY, a reorganization is ongoing, your staff is down by two, and you have 10 weeks to make 1,000 local, remote and mobile PCs year 2000 ready.

Karole Johns, the new director of desktop services at Thomson Financial Services, figured it was doable.

"The first thing I did was sit down and think about the impact on the users' during the remediation, Johns said.

She had two choices. She could baseline: Write each hard drive and into it drop an image of core software (a full complement of mostly Microsoft Office applications), then manually restore mail settings, data files and any additional software. Alternatively, she could manually remediate everything: Update each application individually, preserving users' individual settings.

For Thomson's financial software development group and its 800 PCs, baselining would be "a rough call, because we're running so much development software," Johns said. But manual remediation could take three hours per machine.



AS THE CLOCK TICKS toward the millennium at Thomson Financial Services, Karole Johns' desktop services group has successfully prepared 1,000 local, remote and mobile PCs for the year 2000 rollover.

She asked managers to decide which PCs to baseline and which to do manually. Only the least-customized machines were candidates for baselining, which had few fans.

Inhous used Intel Corp.'s LANDesk Management Suite 6.2 to inventory software, while Microsoft Corp.'s Year 2000 Analyzer picked up the non-year-2000-ready Office applications.

Consolidating most updates onto one CD helped trim the manual process time in less than an hour and a half per machine, she said.

For baselining PCs, which typically took about 20 minutes, Johns used Symantec Corp.'s Norton Ghost to create a standard set of about 15 images.

The team couldn't automatically remove old software, because some units were using it in production. Often, the dependence was on old macros written by someone long gone. "You can't just upgrade in Office 97 and expect those macros to work," she said.

And then there were the remote users.

The 200 remote and mobile desktops ran different core

software on different PC models. CDs for 100 desktops in two remote locations were prepared and sent to technicians there for remediation.

Mobile users either brought their machines for while-you-wait updates or overnighted them to Rockville, where they

were remediated and shipped back within 24 hours, Johns said. A critical part of the process was ensuring that someone was "available to do the remediation and get it out the door," she said.

As three contract technicians worked on remediation, the regular staff tackled everyday problems and reorganization snafus, such as moving a department and having all its PCs fall off the LAN.

A week before the July deadline, with only one unit left to update, Johns was "doing great," said Dennis Funn, vice president of the Technical Operations Group.

By July 30, all that was left was to flash or update a few BIOSes. But Johns had already moved on to contingency planning. "My biggest fear is what we don't control, and because we have a lot of development going on, that's a lot," she said. So there will be monthly software sweeps for the rest of the year.

The staff will be on call Dec. 31 and will work the weekend, testing major production systems to make Monday, Jan. 3, business as usual.

Johns is confident, but not sanguine. "You can test all you want, but until the date is there, you really won't know," she said. ■

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Sun Targets Info Appliances

New Java-based chip could power devices

BY JACK MCCARTHY

Sun Microsystems Inc. announced last week that it has developed architecture for a Java-based chip it expects will be used to power devices in the emerging information appliances market.

Sun said it hopes the architecture, called Microprocessor Architecture for Java Computing (MAJC), will soon be used to make chips for television set-top boxes that access the Internet.

The new technology could

also be used to make chips for mobile computers, games, video for image conferencing and graphics on television and other developing appliances, the company said.

Technical details of the architecture will be unveiled in two weeks, and the processor that MAJC will power will be released in early October, Sun said.

Sun said it will make MAJC chips and may license the architecture to other firms to make chips for their own devices. Pricing details weren't released. ■

McCarthy writes for the IDG News Service in San Francisco.



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Chase is an **IBM** e-business

New integration software from IBM is helping
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To serve clients better than the competition, all Chase Global Investor Services has to do is know more than anyone else and execute flawlessly anywhere. New business integration software from IBM is helping them do just that.

In financial services, information is the raw material of new services and the bond in customer relationships – which are everything to Chase. To add value for clients, many of whom are financial leaders themselves, Chase is leveraging IT assets across business units in a dynamic new way. Instead of integrating systems one by one, they are integrating business processes from end to end with powerful new software from IBM.

This business integration software is designed to work across 100% of all systems in commercial use. At Chase, it is eliminating technology barriers among mainframes, UNIX and Windows NT environments, transforming Chase's custody business units everywhere into a single worldwide platform. For example, data from 83 markets and 30 external vendors is now validated automatically by MQSeries Integrator as it arrives. Work flow is directed to the units best able to execute before market deadlines pass, affording Chase more time to analyze the world's financial information and apply it to the business.

As business goals evolve, the IT infrastructure is "already ready" to respond – a strategic advantage for Chase. "This allows us to stretch our imaginations," says Global Technology Executive Paula Sausville, "to deliver really powerful solutions to the business." IBM business integration software is also stretching imaginations at companies as diverse as Toyota and Texas Instruments. You'll find their stories and others at our Web site.

For business integration case studies in different industries, InfoPack and free seminars, visit us on the Web at www.ibm.com/software/big/systems

MQSeries family

This business integration software is designed to work across 100% of all systems in commercial use with assured delivery. Message content is automatically reformatted for the needs of unlike applications.

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BRIEFS

System Management
Market to Hit \$11.3B

The worldwide system management software market will top \$11.3 billion in revenue this year, according to a recent report from research company International Data Corp. in Framingham, Mass. Last year, global revenues for system management software were up 9% from 1997 figures, reaching \$8.7 billion. U.S. vendors dominated the arena, holding an 80% share worldwide.

Proxim Rolls Out
Wireless Net Suite

Proxim Inc. has announced Symphony Version 1.3, a wireless networking suite that lets small-office users share a single IP address for broadband Internet access. The system includes a Peripheral Component Interconnect card, a PC card, a modem and an Ethernet bridge.

Cards are priced from \$149 to \$199; the cordless modem costs \$299; and the Ethernet bridge is priced at \$399.

www.proxim.com

RealSecure Revamp
For NT, Solaris

Internet Security Systems Inc. in Atlanta has announced RealSecure 3.1, intrusion detection software for the enterprise. The network engine monitors network traffic for signs of suspicious activity and attacks. The software runs on Windows NT and Sun Microsystems Inc.'s Solaris. The network engine costs \$9,995; system agents cost \$750.

www.iss.net

O'Reilly Updates
Chat Tools

Schenectady, Calif.-based O'Reilly & Associates Inc. is launching Version 4.0 of the Webboard forum and chat software. The update can be customized with scripting languages, such as JavaScript and Perl, and allows users to participate in forums using e-mail or an Internet newsreader, or using a browser for chat and forums.

The software costs \$1,995. www.webboard.com

Security Think Tank
Releases Sniffer Tool

Detects remote, eavesdropping computers

BY ANN HARRISON

LIGHT HEAVY Industries Inc., a Boston-based hacker think tank, has released a Beta 2 version of its AntiSniff network security software.

AntiSniff, which runs on Windows NT and Unix systems, detects remote computers that are packet sniffing or surreptitiously monitoring a computer network. Attackers who compromise computer systems often install packet sniffer tools that port targeted computers into promiscuous mode, which allows outsiders to eavesdrop on account names, passwords, credit-card numbers and e-mail sent to other machines.

According to Lóph's chief scientist, who goes by the name Dr. Mudge, AntiSniff runs nonintrusive tests to determine whether a remote

We believe this to be the first commercial product that enables people to spot most machines in promiscuous mode.

DR. MUDGE,
LOPH'S CHIEF SCIENTIST

computer using any operating system is listening in on network communications. It even detects monitoring by rogue

insiders who may have administrative access to a machine—a feature few competitive products offer.

"We believe this to be the first commercial product that enables people to spot most machines in promiscuous mode," Mudge said, "and also alert [network managers that] systems have either changed configurations going into or out of promiscuous mode. This is one of the first things that usually happens to a compromised system."

Availability

A free Beta 2 version of AntiSniff for Windows is available at www.loph.com/antissniff/download.html. Developers note that Beta 2 fixes problems some users reported with different Ethernet cards in the first Beta release.

Beta 2 will also run on Windows 95 and 98, although NT is recommended. The tools include a full graphical interface, a report generator and an alarm system. Lóph isn't pro-

viding support during the beta period, but a commercial release will be available this month. Retail and site licenses will cost approximately \$350 per copy.

Lóph will also release a Unix command-line tool with full source code that will be free for academic and noncommercial use.

Lóph, founded in 1992 by a group of hackers who provide computer/network security consulting, frequently releases computer security advisories to the Internet community. Its members are also featured speakers at security conferences such as the recent Black Hat Briefings and have testified about government computer security at U.S. Senate committee hearings. ■

SNAPSHOT

E-Mail Snooping

Do you consider e-mail over a corporate Internet to be private and confidential? What about sent over the Internet?

	NEVER	SOMETIMES	ALWAYS
Yes	10%	30%	60%
No	90%	70%	40%

Source: Survey of 200 U.S. professionals at computer with 1,000 or more employees, conducted.

Cisco To Ease Voice-Data
Integration on WAN Links

New tools are best for sites with heavy internal voice traffic

BY BOB WALLACE

Information technology managers looking for a way to save money on long-distance calls between sites can use several new products from Cisco Systems Inc. to put that traffic on their data networks.

The devices take voice traffic from private branch exchanges and pass it to high-end Cisco routers or access concentrators, which in turn send it over frame-relay, asynchronous Transfer Mode or IP links to their often far-flung sites, eliminating the need for separate voice networks.

But this is likely only a bit for users with heavy internal—but limited external—calling, especially if some of those external calls are running over very expensive international telephone networks.

Most users have outsourced internal and some external calls to large telephone companies, and some users are fearful of packetized voice for reliability reasons, said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "Most voice isn't intracompany to begin with, and only 20% to 25% of companies have multiple sites," he said.

However, if managers are looking to add more traffic to their router-based data networks, adding voice could be a rational strategy, Nolle said.

The Cisco products include

a high-density T1 voice card that lets its 7200 and 7300 series routers handle 24 channels, as opposed to the original four voice interfaces to its popular 2600 and 3600 branch office access concentrators and the 2600—a high-end addition to the line (see chart).

"We plan to use them to support calls between our domestic and international sites over leased lines and in some cases frame-relay connections," said Jeff Walton, senior network engineer at Niskin in Provo, Utah. "We think this is more cost-effective for most interna-

tional calls." The personal care and nutrition products firm has three U.S. sites and 36 international locations.

The Cisco products can provide a more scalable and flexible alternative to upgrading or replacing widely used but aging T1 multiplexers for combining voice and data over a single wide-area network line, said Jeremy Duke, president of Synergy Research, a Phoenix consultancy. That's because users need only to add the voice modules to their existing routers and branch office concentrators. ■

- Digital high-capacity voice adapter for its 7300 and 7500 routers
- Digital packet voice trunk models for 2600 and 3600 access concentrators
- 3600 access concentrator
- Voice WAN card for 2600 and 3600
- Router software for managing multimedia calls from concentrators and routers

Fine-Tuned Security

Solsoft uses data from routers to facilitate access to systems

BY CYNTHIA MORRAN

AT THE SAME TIME networks are bringing companies closer together, network security concerns are actually pushing them apart. But the folks at start-up Solsoft Inc. think their internal policy-based security management systems could bridge that gap.

Firewall/router combinations are intended to secure corporate networks against outside intruders. Protecting against internal predators is at worst impossible and at best requires hours of tedious hand-building of access control lists, with a high probability you'll have to rebuild them the next time you reconfigure your systems.

But corporations are getting too big, and the applications, data and other resources users require are too diverse and distributed to be easily managed through manual means. It becomes even more difficult if you're using a broad range of network equipment and applications across your enterprise, or plan on changing network and user configurations somewhere down the road.

Security policies have, to date, been all-or-nothing deals — lots of protection from outside intruders and relatively little from internal incursions. That's fast becoming impractical, because an online presence is an integral part of today's business strategies. Plus, today's corporations tend toward geographic dispersal, which means branch offices must be brought into the network security. At the same time, your supplier in one product area may become your competitor in another.

Given that, how do you:

- Construct an extranet that shares relevant data with another company but keeps proprietary or competitive information safe?
- Bring branch offices into the network data flow without compromising security?
- Globally control interdepartmental access to data and applications?

■ Easily build this policy management scheme into every filtering device on the network? Solsoft says you do it with Net Partitioner, its Java-based policy engine that lets you define and apply data and application access lists strategically, as business processes and organizations demand, rather than at the application or network device level. The product doesn't replace a router/firewall security combination but uses those tools as another internal line of defense. Its internal access controls would be difficult or even impossible to implement using standard firewall and router technologies.

The product works with Windows, AIX, Linux, Solaris and HP-UX operating systems and supports most commonly used routers and network filtering devices.

Many other tools in this genre require administrators to painstakingly identify every user, resource and filtering device on the network before creating a policy. Net Partitioner builds its access control list by taking IP address-filtering data from the routers and using it to give a graphical picture of users, groups, applications and other network resources.

Administrators collect groups, assign resource privilege levels and create access points visually. In the background, Net Partitioner assigns IP addressing and manages the inevitable moves, additions and changes with a network policy engine that can speak to filtering devices in their own languages.

That can be immensely valuable when you're trying to give the same level of privileges to,

say, sales personnel in six countries who need to use Lotus 1-2-3 to grab the latest competitive financials and a PeopleSoft Inc. accounting module to submit expenses.

Net Partitioner provides its own script-programming language to access the policy engine and provides scripts for automatically bringing new devices into the policy schema. It also maintains audit trails that can print graphical reports of both network policy configurations and their effects.

Easy granular control over internal application and resource access is a relatively new idea and one that some network administrators may have a hard time accepting: Fine-grained internal security has been so difficult to achieve that whole network infrastructures have been built around not having it.

But until policy-based security management becomes second nature to enterprise operating systems, fledgling information technology organizations will keep tools like Solsoft Net Partitioner handy. ■

■ 1999, Net Partitioner 3.3 ships; company headquarters moves to Mountain View, Calif.

Investors: Moritz European venture companies, including Citic, Netview Group, Scotto Demore Asset Management and Techno-Com.

Products/Services: Net Partitioner starts at a few hundred dollars per network interface to be managed.

Customers: Convergent Communications, Newark, Ala.

Partners: Cisco Systems Inc., Group Bull, Storage Technology Corp. and Hewlett-Packard Co.'s OpenView group

Red flag for IT:

- Some IT shops may be reluctant to add another layer to their security systems.
- Overuse could lead to complex access policies that may slow network performance at the router level.
- Though Solsoft products are a hit in Europe, the company's U.S. track record is slim.
- Net Partitioner supports the most popular network filtering devices, but there are a few gaps.

the buzz

STATE OF THE MARKET

Policy-Based Management? Join the Crowd

Who isn't testing a new, more secure network management product these days? Network admins know powerful competition is on the way. At the top of the list is Cisco Systems Inc., whose management of access control lists is rapidly improving. Of course, Cisco is understandably Cisco-centric, whereas Solsoft has a vested interest in being a multipatform player.

But there are other formidable, or potentially formidable, players, including

■ **CheckPoint Software Technologies Ltd.**

www.checkpoint.com
One of the premier firewall manufacturers, CheckPoint can do its own IP address management, offering a reasonably comprehensive access control list package and championing its own Open Platform for Secure Enterprise Connectivity. The company appears to be doing everything right: managing other network issues such as duplicate addressing as well as network security from the same tool set and relying on the popular Lightweight Directory Access Protocol to centralize user and resource identification. If you're already using CheckPoint's Firewall-1 firewall system, this choice may be a no-brainer. If not, Solsoft's multipatform approach could have an edge.

■ **Computer Associates International Inc.**

www.ca.com
The company that IT managers love to hate sells a policy-based management system they could fall in love with. ProtectIT offers an impressive range of global policy setting tools with extensive auditing capabilities. And it has some big wins with mainframe security packages such as IBM's Resource Access Control Facility. If you're a CA shop already, it should be a strong option.

■ **Microsoft Corp.**

www.microsoft.com
Windows 2000 will ship later this year with a full-fledged security system, including policy-based access control list management to reduce the less-than-stellar showing of its Windows NT 3.51A trusted domains system. The new operating system makes security dependent on Active Directory. Microsoft's new enterprise directory service, but the jury's still out on how effective it will be.



IN 1998, CEO and President Jerome Fouquet founded Solsoft Inc. in Paris and began shipping Net Partitioner LO

Solsoft Inc.

Location: Mountain View, Calif.

Web: www.solsoft.com

Niche: Enterprise intranet/intranet security management

Why it's worth watching: Solsoft's Net Partitioner makes it easier for information technology managers to define very flexible access policies, safeguarding internal data and applications against external

and external incursions.

Company officers:

- Jerome Fouquet, CEO, president and founder
- Michael Spies, vice president and general manager, North America
- Elin Betts, director of professional services, North America

Employees: 32

Milestones:

- 1996: Company founded in Paris.
- Net Partitioner LO ships

COMPUTERWORLD
emerging
companies

Storage-Area Networks

A HOLLYWOOD production company needs to maintain millions of frames of film from a blockbuster movie. An international bank accesses customer records from its terabyte data warehouse in a flash. A prepress organization manages volumes of multimedia materials and shares data with marketing agencies and design departments.

All are examples of how a storage-area network (SAN) can improve storage availability and management.

A SAN is a high-speed network or system that allows different kinds of storage devices such as tape libraries and disk arrays to be shared by all users through network servers. SANs — coupled with Fibre Channel technology — promise performance and administration benefits over traditional LAN-based storage. Because a SAN acts independently from the LAN, LAN overhead and traffic are reduced, and overall network performance is improved.

Today, in the typical LAN deployment, the storage device sits directly behind the server and communicates through bus connections such as SCSI. Each server has its own proprietary storage architecture and, in essence, each pair becomes an island. Because communication among storage devices occurs through servers and over the LAN, the LAN can take quite a beating from the large amount of traffic. Furthermore, storage management is difficult because users must know exactly where the storage is if they want to access it or perform data backup.

With a SAN, storage is accessed centrally. Because a SAN creates a pool of storage that can be shared by multiple servers, any server can access any storage device. It enables the sharing and changing of large amounts of data dynamically, regardless of operating system or application.

"Customers want a central, large data repository for disk

[arrays] and tape drives that is connected to a network that a user community can draw from," says Kevin Reardon, director of strategy at IBM Technology Group in Somers, N.Y. "With a SAN, backup of that data becomes automatic, and consolidation of [storage] gets centralized."

Generally, a SAN communicates via pipelines that consist of an interface called Fibre Channel, a technology for quickly transmitting data between computer devices. Fibre Channel goes beyond SCSI and enables corporations to extend the distance between two connected items and run

more signals faster on a single cable. For instance, where SCSI copper cables can extend 50 meters, Fibre Channels can run up to 10 kilometers, depending on the cable.

But there are drawbacks to SANs. One problem is "there is an incredible range in price," says Jim Porter, president of

Mountain View, Calif.-based Disk/Trend Inc. A SAN with of a couple of servers could cost between \$20,000 and \$30,000. A high-end SAN could cost \$4 million or \$5 million depending upon the capacity and nature of the system, Porter says.

"Almost every company today has serious storage needs," says Scott Robinson, vice president of engineering at Datalink Inc., a storage integrator in Minneapolis. "Industries like prepress and video editing were early SAN adopters, but going forward it's going to be broadly based."

The colossal amount of multimedia data and the need to meet continuous, relentless deadlines made the film production industry a prime candidate for early SAN adoption.

Ray Feerney, president of RFX Inc., a systems integrator in Hollywood, works with film studios, postproduction facilities and special-effects houses and has seen a growing demand for SAN infrastruc-

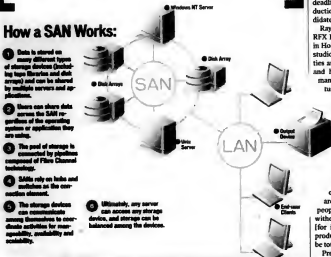
"Part of the promise of SANs is the ability to access data from remote stations just as fast as anyone else accessing it, and to be potentially faster than a dedicated local disk," Feeney says. "However, the full benefit of SANs won't be visible to end users until applications are written so that groups of people can access the data without delay. It would mean [for instance] that the way a production team works would be totally different."

Presently, for most users, the most immediate result will be an improvement in storage response time. Because the traffic is taken off the LAN and put on the SAN, the bandwidth of the overall network will also go up, Beardon says. ■

DEFINITION

A storage-area network is a high-speed network for interconnecting different kinds of storage devices such as tape libraries and disk arrays. These devices can be shared by all users (regardless of location or operating systems) through network servers.

How a SAN Works:



Glossary of SAM-Related Terms

Bus: Like a "highway" for data travel in a computer, a bus is a group of wires through which data is transmitted from one part

Fibre Channel:

A new high-speed (serial) data transfer interface standard that uses optical fiber to connect devices. It was originally de-

signed for most storage devices and other peripheral devices that require very high bandwidth.

Hubs: A common connection point for devices in a network. Commonly used to connect segments of a LAN, it's the place where the data comes together.

LAN: Local-area network
A computer network that is confined to a small area, typically a building or groups of buildings.

RAID: Redundant array of independent disks. A variety of disk drives (typically used on servers) that stores the same data in different places for safety and performance issues.

SCSI: Small Computer Systems Interface (or "scuzzy"). An interface standard that defines the connection of PCs to

Storage Device: A machine that contains a disk or disks for storing data.

Switch: A device that filters and forwards packets between LAN segments. It determines how and where data is

WAN: Wide-area network. A system of LANs connected over a distance through telephone lines and radio waves.

Walker is a freelance writer in Cambridge, Mass.

MORE ONLINE

For more information on storage area networks, visit our Web site:
www.computerworld.com/storare

Web Planners Need More Time

BY DAVID BRESSE

THE INTERNET transforms nearly everything it touches. Now it's even stirring up excitement in the otherwise boring world of electronic calendars, to-do's and address books. In case you haven't heard, Web-based personal information managers (PIM) are now a minority.

More than a dozen Web sites offer themselves as the central holding place for your personal daybook, accessible from any browser and free. It's not free for everyone, of course — the sites charge event-oriented e-commerce sites to be mentioned on your calendar. Most of the sites let you share your calendar with friends, family and co-workers, and many can sync up with Microsoft Corp. Outlook, handheld organizers from Palm Computing and Windows CE devices.

You probably wouldn't use a Web PIM to replace a well-used PalmPilot, notebook-based PIM or corporate scheduling program. What's different about Web PIMs is their ability to let you publish your schedule to

anyone with a Web browser. Plus, they give you the same anytime, anywhere access to the lists that run your life, which can be a lifesaver if you lose your regular organizer. If you don't need those two functions, Web PIMs are probably too toy-like and Web-centric to serve as your only PIM.

Registered users of free Web-based calendars in the U.S. are predicted to nearly double next year to 22 million, about half of whom are active users, according to Interactive Data Corp. (IDC), a market research firm in Framingham, Mass.

But the outlook for this category isn't all rosy. "No one is delivering what I'd consider to be really robust functionality,"

says Barry Parr, an analyst at IDC. Vendors and analysts say the real future of these mini-applications may be in replicating your desktop wherever you go and making the information on it accessible from phones, personal digital assistants, PCs and kiosks. Direct links to tickets for calendar events will come soon.

I tried three products representing three segments of this fast-evolving category. Day-Timer Digital, from the same people who make those leather-bound Day-Timers, is a stand-alone site with few pretensions to being much more than a calendar. Yahoo Calendar is the quintessential calendar/portal hybrid, while Visto Briefcase blends a more functional set of PIM tools with the same types of commercial links as the others.

I slightly prefer Yahoo Calendar over the more powerful Visto Briefcase for the same reason I like Yahoo and Yahoo Finance: the almost retro, text-heavy interface that unexpectedly turns out to be the best way to view information on the Internet. ■

Day-Timer Digital

Day-Timer Digital Inc.
<http://digital.daytimer.com>
Free

Day-Timer's calendar site greets you with the most elegant and simple screen interface of the three. Like the others (and most from Web services), it first demands that you fill out a questionnaire, but unlike Briefcase, it doesn't ask for your age and phone number. You then pick a user name and password, which becomes your keys to enter from any browser in the world.

Like the others, Day-Timer Digital has a public calendar that shows events related to your favorite topics, but the topics are limited to entertainment,



sports and online (with more to come). You can use Newbed-Parkland Co.'s Instant Delivery

to print your schedule (Briefcase has the same utility) and e-mail the calendar's event links to friends. My contacts and to-do's are synchronized perfectly to and from Outlook but didn't seem to make

it from Day-Timer Digital to my Palm IIIx (though the transfer worked in the other direction).

IDC analyst Barry Parr says such synchronization problems are typical of Web PIMs. Briefcase was the only one to move data from the Palm to the calendar site, and Yahoo failed in both directions, though it showed items I'd entered in Briefcase. (This only proved that the real hub is Outlook.)

Day-Timer Digital's to-do page was a pain, with little drop-down pick lists for everything (though in all fairness, Yahoo Calendar is menu-intensive, too). I found the calendar's entries tiny and hard to read. And in late June, I couldn't stop it from defaulting to the current month even though I wanted to enter something into July's calendar.

A LG product, indeed.

Visto Briefcase

Visto Corp.
www.briefcase.com
Free



Visto Briefcase can create a group site for swapping photos and files

"Cute" is the word that comes to mind to describe Visto Briefcase's colorful list versions of the PIM standards we've come to know, if not love. This is by far the most graphically rich and full-featured of the three. But more significantly, it's the furthest from the ultimate goal of duplicating your most vital desktop files and data in a single, always accessible place.

Briefcase's calendar applet links to a directory of events, Yahoo-like in appearance, though not quite as comprehensive but better than Day-Timer Digital's trio.

The address book works more like a full-blown contact manager, complete with spaces to enter reminders. If your system has a sound card and headphones, you can push AT&T Corp.'s 15-cent-per-minute Click2Mail and dial an Internet phone call right from the contact

entry. You can also create a group site for swapping news, photos and files. My family site promptly sent an e-mail containing links right back to itself.

Visto Briefcase is in many ways the least-designed PIM of the three, but executives may prefer Yahoo Calendar's more familiar look and convenient location near the big part's news and financial data.

Yahoo Calendar

Yahoo Inc.
<http://calendar.yahoo.com>
Free



Yahoo Calendar is easy to customize with detailed preferences

Besides quick access to the most information about public events, Yahoo Calendar is the most customizable of the three and has more two-way links to portable devices and PCs.

You can set calendar preferences in greater detail than the others, such as the start and end times of your workday and religious holidays.

You can also send and receive e-mail, track contacts and notes to-do's, but there's no Briefcase-like file storage. There's a group option like the one Briefcase has and Day-Timer Digital lacks.

Yahoo Calendar has several important and unique features. The biggest are Time Guides, which are events from selected Yahoo directories, as well as friends' and co-workers' Yahoo calendars overlaid with yours (assuming they've given you access rights and a password) to help you spot schedule conflicts. Calendar reminders can be sent to your regular e-mail account.

On the downside, I found the event-filtering controls complicated, and synchronization with my Palm IIIx didn't work. But Yahoo Calendar's my pick because it does just enough of what I find truly useful. ■

Essex is a freelance writer in Antrim, N.H.

OPENING YOUR OWN PORTAL

Doorways and entryways provide a guest with glimpses inside your home.

Until now, doorways into corporate information systems haven't offered that sort of easy access for employees. In fact, they often have been more like fun houses, with false corridors and mirrors leading you in the wrong direction By Tim Ouellette

IT'S NOT for lack of trying. Companies have been slogging through middleware development, report writers and data conversion schemes for years, trying to move data easily among applications and make corporate data more accessible. But the simplicity of the Web's interface and its almost universal acceptance among users is making it reasonable for companies to build portals that give users one entryway into the firm's digital knowledge.

That's why building Web-based portals as open doors to corporate data is becoming a viable business option. In fact, more than half of 300 large companies surveyed by The Delphi Group consultancy in Boston said they have corporate portal projects under way. In a separate study, Computerworld found that 72% of the companies it surveyed have portals on the drawing board or in operation. (see story, page 79).

What Is a Corporate Portal?

But there's no clear definition of corporate portal, and you'll probably get a different answer from most vendors.

Here's one basic definition of a portal, based on interviews with users and consultants: A portal combines different information from the Web, corporate databases and applications into a single point of access using Web browsers and search technology. This data is described as either structured, like application and database data, or unstructured, like Web sites and e-mail messages.

Corporate portals can include links to information sources, such as Internet news feeds, stock tickers, calendars, news announcements, human resources self-service applications or discussion groups. The portal can be tailored to present information based on the needs of a group of users or individual users.

For example, the corporate portal at Advantage Sales and Marketing, a food wholesaler in Irvine, Calif., includes links to food industry publications as well as to different units of the company. The company says it plans to have links to the company's retail application in the future. "The content isn't just company data published to our Web server," CIO Kevin Faugh says.

A good way to understand how a portal works is to look at the different pipelines going into your house, says Tom Kouloupolos, president of The Delphi Group. When oil or gas enters from one pipeline and water from another, it's the portal's job to tell the water to go to the different faucets in the house, while the oil or gas goes to the burner in the basement. It's basically getting the right information to the right people.

But don't confuse portals with the executive information systems that have been used in some industries for many years, Kouloupolos says. Portals are for everyone in the company, and not just for executives.

"You want people on the front lines

making decisions [using browsers and portals] rather than just executives [using specialized executive information system software]," Kouloupolos says.

A corporate portal isn't simply a home page like "My Yahoo," says Marty Gruhn, vice president for Internet business solutions at Summit Strategies Inc. in Boston. "It is really a Web interface with industrial strength behind it in the form of document management, workflow and role-based computing," she says.

The Benefits

Respondents to the Computerworld telephone survey said the biggest benefits from portal projects so far include delivering company-specific information to users, providing access to human resources services for employees, delivering industry news from outside sources like the Internet and providing outside customers with better access to corporate information.

By directing information to users right at the portal level, companies can help avoid some of the aimless surfing at corporate intranet sites or across the Internet. "Corporations can control what comes to me as a user, based on what I need to know, not what I want to know," Gruhn says.

Portals can take existing dispersed file servers and give users a cohesive way to get at all those files organized specifically for them, even if they're in remote locations, says David Porter, CIO at Optiva Corp., a maker of sonic toothbrushes in Seaside, Wash. "If I can save each individual in the company five to 10 minutes a day searching for a piece of information, that easily pays back the cost of the portal," he says.

Another benefit to remote users: You can quickly make company information available so they feel more a part of the company, Porter says.



Advantage Sales opened its portal to customers like Mott's USA in Stamford, Conn. The result was improved communications and follow-ups and reduced mail, e-mail and fax costs, says Mike Crosby, CIO at Mott's.

Where to Begin

At first, you don't need technology, just pain. That's because the best way to begin a portal project is to identify some pain that has to be addressed in the organization, Gruhn says.

For example, Advantage Sales and Marketing was stretching its e-mail system and corporate wide-area network to the limit and needed a different way to distribute information to the right people, Paugh says.

The reason for the problem? The only way to get updated marketing presentations to its 1,000-member nationwide sales staff was to e-mail giant presentation files to each person or have users access the files on slow shared drives on the WAN. That was often happening on a daily basis.

At first, the answer seemed to be simply building a corporate intranet. But the idea of a corporate portal seemed the next logical step for the company's 6,800 employees, Paugh says, because it went further in organizing the information for easier access by all employees.

Another reason to start a portal is to find the right information on the Internet and get it to users. At Optiva, the research and development folks wanted to be able to scan the Internet for the latest information on their market, Porter says.

Similarly, Mike Miller, the chief technology architect at Baylor Health Care System in Dallas, wanted to break down the barriers between doctors in the organization and the health care information system.

Continued on page 78

OPENING YOUR OWN PORTAL

Continued from page 77

Corporate portals will live and die on role-based computing. It must be intrinsic to software to have templates for role-based access to data.

MARTY GRUHN,
SUMMIT STRATEGIES INC.

Whatever the case, the portal may begin life as a particular business response, but in the end it will most likely replicate itself across the company, Gruhn says.

Technology Behind the Portals

Here's the fun part: Once you identify the pain, the process to relieve it at first seems even harder to undertake.

That's because the basic parts of a corporate portal can include myriad technology pieces, including the following:

- Web presentation technologies for the interface itself.
- Security systems.
- Personalization agents that present specific data to specific groups of users.
- Groupware to create discussion groups.
- Transaction technology to allow users to create orders or log complaints.
- Document distribution formats.
- Search functions.
- Data integration capabilities, to bring in data from structured and unstructured data sources.

That's a lot to put on an information technology manager's plate. But because most corporate portal projects start life as solutions to specific business problems, it's OK to start small and build up. "We are beginning with small steps right now," Paugh says.

The easiest step is to make sure everyone who will use the portal has access to browser technology. Users and analysts interviewed agreed that a key ingredient is Extensible Markup Language (XML), which separates data from the presentation layer on a Web page.

"There is a big difference between HTML and XML. XML is focused on the content, not the display [like HTML]," Miller says.

"XML is intelligent HTML. It will be the digital nervous system to let information flow from one kind of data source [traditional applications] to another [corporate portal]," Gruhn says. Of course, she notes, XML hasn't truly been tested in battle yet because a lot of portal projects are just starting to really push different data sets onto Web sites.

Another important piece in the success of corporate portals is middleware technology. Middleware has been around for a long time in various forms. It's the much-maligned software that takes data from one source and tries to move it to the next application smoothly, converting formats as it goes.

Because there are so many different types of data and applications out there, middleware, such as IBM's MQSeries and BEA Systems Inc.'s Tuxedo, is still evolving to handle all these possible combinations.

In fact, the Computerworld survey on

portal projects found that 57% of respondents said at least four discrete data sources or applications will be feeding information to their corporate portals.

For example, Multnomah County in Oregon currently has data from nine different back-end systems feeding its criminal justice portal using Viador Inc.'s E-Portal Suite.

And making all that data accessible from the portal is where most of the work in building corporate portals will take place, says Marylynne Henry, project manager of community services at Baylor Health.

One important piece of a corporate portal is the naming scheme companies use to identify the different kinds of data they want users to access from the site — called enterprise taxonomy by Delphi's Koulakopoulos. Such categorization schemes will help the technology pieces best fit all the data into the right places and aim the data at the right people.

For example, at Advantage Sales, Paugh called these different categories "channels" and asked four business groups to define all the channels out there and create "channel managers."

Products

Many vendors are scrambling to offer portal products, so the field of choices can boggle an IT manager's mind.

For example, enterprise resource planning software giants like Lawson

Software Inc. and SAP America Inc. are offering their current users portals that build off their companywide suites of applications.

But Gruhn warns against immediately choosing one of your existing software vendors as your source for portal technology. "Don't look for one of your own existing vendors to help you with a complete portal solution," Gruhn says. "Would you really want your portal aligned with one set of software, putting all the other data in your company second?"

A single portal server product that integrates many of the technologies mentioned above can run upward of \$200,000. For example, Plumtree Software Inc.'s Corporate Portal Server starts at \$250,000, Sequoia Software Inc.'s Interchange 2000 costs \$50,000 per Windows NT server, and Mountain View, Calif.-based Glyphics's PortalWare starts at \$225,000.

But users say the cost is acceptable when weighed against the benefits of the corporate portal and against the in-house development costs of building all the pieces.

Users interviewed declined to provide specific pricing for their portal projects but say that with off-the-shelf products, the cost of their portals fell in line with their original budgets.

For example, Paugh originally planned to create Advantage's portal in-house. He says his presentation on the in-house project made cost overruns the one thing that had scared management. "We regrouped and decided to purchase off the shelf," Paugh says.

Advantage bought RIO from DataChannel Corp., a server-based system that groups all data into different channels that are accessible to certain users.

"We don't have a single developer, and we are really lean on the IS side," Paugh says.

DataChannel RIO provided his company with a secure architecture and simple publishing capabilities. The product uses a set of basic templates for Web-site design that make the portal and related sites look pretty basic. That allowed for easy creation of the portal and different subject areas but has some users requesting more customized Web sites now, Paugh says.

Search engines, which are becoming embedded in several portal products on the market, are one feature to look for.

For example, Viador Inc. in San Mateo, Calif., is embedding the InfoSeek search engine in its E-Portal Suite, used by Multnomah County. With the InfoSeek capability in its criminal justice system portal, portal project manager Keith Saari says he expects searching all the reports on the Web site will be much easier — and it can be done from one central location.

Another feature considered critical

- Plan ahead for the categories of users that will be coming through the portal
- Test different products to see which ones fit your needs
- Leave room for adding different pieces of technology that could help improve your portal over time
- Make security a priority, because you will be dealing with corporate data
- Launch a publicity campaign to help people understand what the portal can do and what options it will offer users

CON

- Depend on one of your existing vendors for a portal solution that could limit your moves in the future
- Let several different corporate portals grow up in different parts of the company if you want the portals to work effectively
- Try to cram too much into the portal without planning and categorizing the data

as portals grow larger is the combination of role-based computing agents and security. An example is a portal allowing middle managers to see one set of information and options while allowing administrative personnel a different set of options.

"Corporate portals will live and die on role-based computing," Gruhn says. "It must be intrinsic to software to have templates for role-based access to data."

Porter says the use of Plumtree Software's Corporate Portal Server gave Optiva a Web skeleton to build from, making it easy to publish information for access at the portal. It also made it easier to personalize the site for each user, he notes.

Baylor Health Care System is also doing role-based security on its portal with the help of Sequoia Software's Interchange 2000. That was important because of the privacy needed for patients' medical files and case information. Miller says choosing Sequoia helped Baylor use XML to pull data from legacy systems to the Web site.

Lessons Learned/Port Advice

Companies in the process of building corporate portals advise others to take the following steps during the process:

- Plan security issues up front. This is especially true when reviewing portal products, Porter says. He tested one product that properly blocked unauthorized users' access to certain sites from the portal, but then let the same unauthorized users access secured documents from the portal via the search engine. Miller agrees with the importance of security planning, saying, "We could have made our portal happen a lot quicker, but we put a lot of time into infrastructure and security issues."
- Expect to spend most of your time dealing with traditional IT issues, like data integration, rather than Web design. "You have to pay attention to what the portal looks like on the front end, but most of the work is on the back end," Baylor's Henry says. Other users say they plan to hire or add staff to help pull corporate data out of data warehouses and make it accessible from the corporate portal.
- Get the business units involved so the needs of different users can be addressed in the portal. At Advantage, Pugh had the business heads of the four major groups and the food wholesaler act as channel managers to decide what information should be accessible from their groups. Optiva's Porter recommends selling management and users on the concept by showing them a demonstration portal with a small slice of company content, so they see what is possible with the portal and suggest their own ideas for what it could do.

BY JAMES H. CONNOLLY

VIRAL, CORPORATE PORTALS ARE where IT managers wait their users working. In a recent telephone survey of 100 midsize and large organizations, Computerworld researchers found that 72% of the managers surveyed said their companies are using or planning to use corporate portals, with 26 of those 72 already being in production use across the organization. Portal usage has reached this level in a matter of months—the corporate portal concept having taken shape only in late 1998.

Corporate portals are Web-based interfaces that unite access to multiple information sources and applications specifically for corporate users and, in some cases, for selected outside partners such as key customers.

The survey, conducted by Computerworld's IT Intelligence Unit, showed that corporations are turning to portals for the following uses (ranked by the highest number of mentions):

- To deliver company-specific information or policies to employees.
- To provide employees with access to organizational services such as human resources applications.
- To provide employees with information about corporate expertise or for knowledge management.

Up and Running

More than a third of those planning portals already have them in full production use

STATUS OF PORTAL PROJECTS	
No plans	20%
Full production across organization	28%
Limited use at department level	36%
Planning stage	18%
Development stage	10%
Test program	8%
Don't know/Not applicable	1%

Base: 100 midsize and large organizations

What Does the Future Hold?

Because most portals are still in the early stages of development and use, users can expect more efforts to make more corporate data accessible from the portal. This will mean more middleware and data warehousing projects and products to facilitate the process for everyone involved, users agree.

Advantage expects to hire a developer to handle the conversion of data in its data warehouses into formats that can

Portals: The Place to Be

"I think portal is just another word for intranet for a lot of people."

— Wayne Eckerston,
Patricia Seybold Group

- To provide outside customers with access to corporate information.

- To deliver to employees industry or professional information and news from outside sources.

One key to the idea of corporate portals is to provide employees with multiple sources of data—and those who are using or planning portals are doing just that, with 57% of them incorporating at least four discrete data sources or applications in their portal strategies.

But don't think of portals as the place where employees spend their workdays. Managers who already have portals in use tend to classify their employees as "light" users of their portals, with 62% of respondents saying employees access the portal once or twice a day.

Yet the apparent rapid growth in portal usage does raise questions about how managers define the term corporate portal. "I think portal is just another word for intranet for a lot of people,"

says Wayne Eckerston, an analyst at Patricia Seybold Group in Boston.

To Eckerston, the key difference between an intranet and a portal is that with a portal, users get to choose what information they want to see. Eckerston, noting that it doesn't take much work to place a Web-enabled interface on an existing data warehouse or application,

says the coming second-generation of portal technology will prove interesting as vendors face user demands for access to unstructured data. ▀

10 Biggest Challenges

Security, scope and data quality headed the list when managers were asked to cite the greatest technical and business challenges to building a corporate portal

CHALLENGES	
1. Security, security, security	
2. Defining the scope and purpose of the portal	
3. Finding the time and the money	
4. Ensuring consistent data quality	
5. Getting employees to use it	
6. Organizing the data	
7. Finding technical expertise	
8. Integrating the pieces	
9. Making it easy to use	
10. Providing all users with access	

Base: 100 midsize and large organizations

Standard Tools

Where people are building portals, they are counting on existing Web tools

TOOLS USED TO BUILD PORTALS	
General-purpose Web-site tools	82%
Customized portal through outside service	16%
Groupware suite	11%
Commercial portal software	10%
Other	7%

Base: 72 midsize and large organizations

be read from the corporate portal for things like Web-based reporting.

Where some portals have limited audiences because they were created for a specific application, expect to see efforts to expand portals to many more employees and even customers and business partners. Baylor Health Systems expects that more administrative personnel will eventually work through the portal that's now limited to physicians.

Right now, portals are targeted primarily at knowledge workers—people who need to coordinate different pieces of information. Kouloupolous says. But in the long term, corporate portals will be accessible by everyone, from knowledge workers to employees in the field using handheld devices like PalmPilot as their means of linking to the portal. ▀

Owlett is a freelance writer in Scarborough, Maine.

TECHNOLOGY FLASHBACK

50 YEARS OF TECHNOLOGY INNOVATION • 1950-1999

A RISC-y Proposition

New architecture simplifies microprocessors' internal operation

BY LESLIE GOFF
I AM GET'S credit for developing the first prototype computer based on what became known as the reduced instruction set computing architecture in 1980. But like so many early developments in the computer industry, the RISC architecture that underlies today's leading servers and workstations was born in a classroom.

IBM's project, a mini-computer chip set code-named the 801 and based on work done by John Cocke in the 1970s, was hush-hush at the time. Meanwhile, at the

University of California at Berkeley, professor David Patterson also had an idea for simplifying a microprocessor's internal operation by eliminating many of the built-in instructions, decreasing the number of machine cycles needed to execute a command.



A RISC YOUNG TALENT: David Patterson

"The IBM work pre-dates ours," Patterson says, "but they weren't allowed to discuss their research because it was so radically different, it was possibly threatening to the rest of IBM. The work we did was on a single chip, and it



JOHN COCKE set the stage for the 801

helped break things so the work could come to the fore."

He called his approach RISC to appeal to a key funding source, The Defense Advanced Research Project Agency's stated mission at the time was to support "high-risk, high-reward research," Patterson recalls. "We coined the term because it reflected their goal and it fit the technology."

The tactic worked. Patterson put together a team of graduate students to develop the chip and got Hewlett-Packard Co. to manufacture the prototype. They finished the chip, dubbed

the RISC I, in only five months.

It was a success, later gaining the support of Sun Microsystems Inc., Fujitsu Ltd. and other computer manufacturers. That set up a notable rivalry with another RISC camp, led by a friend and colleague at Stanford University, John H. Hennessy, in partnership with MIPS Technologies Inc. By the late 1980s, the two RISC camps were battling for industry leadership, with Sun's SPARC microprocessor emerging as the best apparent.

Today, Intel Corp.'s Pentium borrows a lot of ideas from RISC, Patterson says, even though it's not a RISC architec-

ture per se. Without RISC, it's likely hardware price/performance wouldn't be where it is today, Patterson says. "The doubling of performance every 18 months has really happened since the RISC movement."

While Patterson's chip took off commercially, IBM's chip set did not. But the work done in 1980 eventually resulted in IBM's PowerPC and the RS/6000 workstation line.

Although his ideas paved the way for corporate IT to replace its mainframes and minicomputers with clusters of servers and workstations, Patterson will probably never be a household name. "Our country values captains of industry," he says matter-of-factly, adding with a laugh, "I've created very little wealth. My work has been about ideas and education." ■

OPTICAL DATA STORAGE

Philips' Eye on the Future

BY LESLIE GOFF

Little did anyone realize that the digital compact disc audio standard that emerged from the labs of Philips Optical Storage in 1980 would eventually become a standard in personal computing.

In fact, Philips had several optical disc technologies of various sizes and proprietary formats that it was pushing for information technology applications like data archiving.

But within a few years, the 5.25-in. CD was being hailed as a potential replacement for hard disk drives because its 650M-byte capacity seemed so boundless at the time.

Not for Primary Storage

"I think people were thinking that hard disk drives would have limited density and that the next generation of permanent drives would be optical drives," explains Rob van Eijk, vice president of strategic alliances at Philips. "Well, that's not the case. The optical disc is not used for primary storage."

Van Eijk has been with the San Jose-based company since 1994, about the time the company started to push the CD format for applications like interactive encyclopedias.

Instead, what turned out to

be important about the CD-ROM wasn't its density or the amount of data it could hold, but rather the "ability to create a standard format for media at a low cost," van Eijk says. It was inexpensive, allowing for the wide distribution of audio and then data material.

Niche World

The less common optical disc formats are still being used in niche applications such as document imaging and management in insurance firms. The CD-ROM hasn't replaced the magnetic hard disk, but it has emerged in its own right as the media of choice for distributing software, games and interactive applications, with 70 million CD-ROM drives currently shipping per year.

"The technology was established for music distribution," van Eijk says, "and by the time it was looked at for data, it was an established standard and people were familiar with it." ■

Goff is a frequent contributor to Computerworld. Contact her at lgoff@netcom.com.

■ Flashback was produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

1980

Tim Patterson at Seattle Computer Products begins writing an operating system for use on his company's 8086-based computer, dubbed QDOS. Microsoft Corp.'s Paul Allen approaches Patterson, offering him \$50,000 for the rights to sell QDOS to an unnamed client. Patterson accepts the deal.

Microsoft's destiny is set in motion when Digital Research Inc.'s Gary Kildall doesn't make a deal with IBM to use his CP/M operating system on its top-secret PC line, which is under development. IBM's logic ultimately offers the job of creating a PC operating system to Microsoft, and the two sign a contract. Microsoft begins reversing QDOS.



Apple Computer Inc. introduces the Apple II, targeted at the business market, but it doesn't sell well. In December, Apple goes public, selling 4.6 million shares at \$22 each, turning more than 40 employees and investors into millionaires.

Microsoft introduces Pascal, develops Think, an enhanced version of the Unix operating system, debuts an 8

spreadsheet application, and releases the Microsoft SoftCard, its first hardware product, which enables the Apple II to run IBM applications.

Sangate Technology Inc. announces the first 5.25-in. hard disk drive.

The company that later becomes Ashton-Tate Corp. is founded as Software Plan by Neil Lashlee and George Tate.



John Shock, a computer scientist at Xerox Corp., invents the computer worms and inadvertently creates a network security threat. The short program is designed to make computers more efficient by searching a network for file processors, but it has the unanticipated effect of invading network computers and propagating itself.

Sandy Trevor at CompuServe Inc. writes CS Simulator, which offers real-time "chat" online. CompuServe users love it.

IBM grants approval to William Lewis for a project to develop IBM's first microcomputer. The team delivers a prototype to the committee and gets the go-ahead to build a PC.

Doug and Gary Carleton found Broadband Software Inc. in Eugene, Ore.

Sperry Grouping up at Bell Labs develops a set of languages, called C with C++, that will be refined and become C++.



Hewlett-Packard Co. completes work on its first PC, the HP-48C. It's designed for personal use in business and industry. The unit has input/output modules that enable it to control instruments, add more powerful peripherals and talk to other computers.

Atari Corp.'s Battlezone game is introduced. The U.S. Army uses a modified version of it for training purposes.

Data General Corp. introduces the Eclipse MV/8000, a 32-bit machine. In 1982, Tracy Kidder will win a Pulitzer Prize for *The Soul of a New Machine*, which chronicles the creation of the Eclipse.



Xerox Corp. management directs David Little, head of the company's systems development unit, to introduce the Star computer system by the spring of 1981. Star will be a commercial version of the Alto PC, developed by Xerox Parc researchers in 1972.

Compiled by Leslie Goff and Computerworld's corporate librarian, Laura Hunt.

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Taking a Byte Out of Crime

IT pros interested in information security careers may not find much in the way of formal training, but they can forge their own career paths

By Deborah Radcliff



BILL BONI says people skills are critical in a security career



ROB CLYDE got his start playing computer games at age 17



JENNIFER SUTHERLAND got employer-sponsored training

AT 17, Rob Clyde liked to play a remote Star Trek game with his buddies who were spread out across the country. To win the game, he wrote a program called "CONTRL" which allowed him to monitor his opponents' computers from afar.

One day while in college in Utah, he was spying on his father's machine in Massachusetts and he saw that his father was running the Star Trek game. So Clyde sent a self-destruct command that blew up the Starship Enterprise on his father's screen and replaced it with the words, "Ah ha! I have control of the system." You can imagine the surprise of a handful of Boy Scouts who were touring Clyde's father's computer room at that moment.

"[The Boy Scouts] thought the computer had gone psychotic. They were sure it was a story right out of science fiction, like HAL on 2001: [A] Space Odyssey," Clyde says.

Using that CONTRL code, Clyde launched an intrusion-detection tools company—the \$61 million Ascent Technologies Inc.—in 1994.

Clyde is one of many who've forged their career paths in the ever-growing field of information security.

There aren't many information security specialists graduating from college these days (see "Resources"). But the need for them is on the rise, especially as internetworking and e-commerce heat up.

"The problem of finding information security skills is getting worse," says Richard Brewer, an analyst at International Data Corp. in Framingham, Mass.

Those security administrators, analysts, specialists, architects and consultants who have made a name for themselves in the complex world of information security have done so on their own terms.

And they're in high demand.

Brian Koref, system security project leader for the high-end business hosting Internet service provider Conson Corp. in Santa Clara, Calif., says he's willing to pay \$85,000 to \$100,000 per year for senior security analysts and \$90,000 to \$120,000 per year for security architects and project leaders. The average security administrator earned between \$40,000 and \$90,000 last year, according to the 1998 SANS Institute System, Network, and Security Administration Salary Survey (www.sans.org).

With salaries like those, it

ing them, for example, not to leave their passwords where others can see them and not to download viruses or otherwise put the network at risk.

According to Boni, too many companies make the mistake of expecting their overburdened network and systems administrators to shore up information security leaks.

"Good information security people are scarce because the role is a daunting combination of technical knowledge, experience, business savvy and people skills," he says. "But every organization should strive to retain and develop such staff."

The Benefactor Route

Boni is referring to corporate-sponsored training. This is the path Jennifer Sutherland has taken.

Back in 1994, Sutherland saw a presentation on information warfare and computer foreen-

Resources

College, business and government information security collaborations:

Purdue University's Center for Research and Information Assurance offers some courses on information security. www.cria.purdue.edu

James Madison University offers a master's of computer science with a concentration on its information security program. www.infosec.jmu.edu

sics, but her goal is to eventually work with the top computer forensics experts in the nation. Her advice to anyone considering information security careers: "Know your network, read the trade magazines and follow user groups."

Backdoor Man

Sutherland's recommendations are echoed by Yetter-Ra, a hacker-turned-security consultant who works for some Fortune 500 companies.

Yetter-Ra actually started his security career while working the night shift at a Windows NT administrator at an East Coast hospital five years ago. During the quiet hours of the night, he'd poke around the network and uncover what he calls "buggy, gaping security holes." He brought these to the attention of his boss and soon became the hospital's NT security administrator.

Yetter-Ra reads a great deal and hangs out with hackers to continue his education. He's working toward becoming a Cisco Systems Inc. security specialist as he rounds out his security skills and expand his consulting practice.

His advice? "Forget about hats. It doesn't matter if it's white hat [good hackers], black hat [evil crackers] or red hat [a tongue-in-cheek reference to a flavor of the Linux operating system]. It's all about information and skill. You can learn valuable information from them all."

Radcliff is a freelance writer in Santa Rosa, Calif.

Cents of Security

Preliminary results for average salaries from the 1999 SANS System, Network, and Security Administration Salary Survey

Job Title	Average Salary
Security administrator	\$40,000
System administrator	\$90,000

makes sense to look into how today's security professionals developed their careers.

Secret Agent Man

Bill Boni got his start working as a counterintelligence agent for the U.S. Army during the 1960s.

Now director of investigations for PricewaterhouseCoopers' Los Angeles-based Financial Services division, he practices the emerging art of computer forensics—gathering evidence of a crime or misuse of a computer or network. He also evaluates network security and trains clients on how to better secure their networked systems.

Boni says the most important element of his work involves people skills. He not only must convince managers of the need for information security, but he also teaches end users security basics, remind-

ing them, for example, not to leave their passwords where others can see them and not to download viruses or otherwise put the network at risk.

She shared his aspirations with her boss at Trident Data Systems in Virginia. "The area of computer forensics was booming, so they moved me right on over," she explains. "They sent me to a lot of training and certification courses, mostly Unix-intensive."

Now a computer forensics analyst at Ernst & Young LLP in San Antonio, Sutherland says she continues to reap generous training benefits. And she says she loves her job, which consists mostly of responding to client calls to investigate network breaches or computer misuse.

In October, Sutherland will be formally promoted to the management ranks at Ernst & Young. It may take her years to learn everything she needs to know about computer foreen-

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The Next Big Thing

WHAT'S THE Next Big Thing? Sure, we're staring down the barrel of the year 2000 now, but what will revolutionize what IT shops do in the '00s the way PCs did in the '80s and the Internet in the '90s? History tells us that earthshaking technologies already existed at least five years before they turned our world

upside-down — we just misjudged their impact. Which means something that's already out there, just waiting its chance, will blindside us in the '00s and start the revolution all over again.

So what are the most likely suspects?

Wireless handhelds. Take a Palm handheld. Add wireless networking and you get untethered, keyboardless computing. Tie it in to business systems and you get instant access to everything, everywhere. Wireless handhelds won't replace PCs on the desk — they'll be another access device, information's answer to the cell phone. That's what post-2000 business will require.

Sure, handhelds are the bane of IT shops. We hate 'em. They're insecure, hard to connect to — as bad as the desktop computers users smuggled in 20 years ago. And we all know what happened to them.

Speech recognition. Right now, no one knows what to do with it. Dictation for keyboard-shy executives? Hands-free phone menus? But with a little improvement and a big database behind it, you could digitize, transcribe and search every piece of spoken communication in your business.

No, it won't work perfectly. But when every meeting, customer service call, negotiating session and sales call is going into the system, users will have huge amounts of spoken business communication suddenly accessible.

Besides, right now, IT shops view speech recognition as a toy. That's a great leading indicator of a Next Big Thing.

Virtual reality. Here's more toy tech. In fact, video games are what push VR technology.

But if business gurus get their way, pretty soon we'll all be constantly reorganizing to match constant business change. Forget org charts and business-process flowcharts. Forget knowing who does what. A VR map of the busi-

ness will be the only way to track missing orders, find the people to solve customer problems and troubleshoot those ever-changing processes.

But isn't VR too, well, gamey for real, desk-bound business stuff? That's OK. By 2010, most businesspeople won't remember a world without Pac-Man.

Microcash. Think no one has doped out how to charge small amounts of money for information and other tiny Internet transactions? Go to the grocery store. See the prepaid phone cards at the cash register. Get a clue: Prepaid. Dirt-cheap user-side technology. Easy to buy. Dah.

With Y2K fixes holding everyone's attention now, figure it will take until 2002 for e-commerce brain trusts to realize they can use exactly the same throwaway approach to charge electronic pennies. Our job will be cobbling together the back-end technology — and keeping the transactions cheap.

Information appliances. When information technology is pervasive in business, it's too important to be left to techies. That's when prepackaged, low-maintenance servers and desktop devices will let users take control — and cut the IT shop out.

Don't feel bad — it's nothing personal. Users' focus is short-term business gain, not long-term technical investment. They'll outsource, hire specialists, do their own IT janitorial work. They'll gain some scars and maybe some respect for what we've done for years.

Meanwhile, IT shops will spend less time twiddling bits and jiggling wires, and more time focusing on information than technology. And for IT, that may be the real Next Big Thing. ■

Hayes, Computerworld's staff columnist, thought CPM 3.0 was the Next Big Thing 20 years ago. What are your picks? Let him know at frank_hayes@computerworld.com.

SHARK TANK

FREE ADVICE for Coral Risk Management and Vanguard Integrity Professionals, two security vendors that apparently hate each other's guts: Your customers are sick of your little hair-pulling fight. You get sales reps switching sides? You got lawsuits? Tough. Work it out. No need to write your users letters about the mess. As one maritime customer (for now) told the Tank, "It'd be nice if they put that much effort into their products."

HEADS UP: Bob, a loyal Tankster, thinks he's found a glitch in NT Service Pack 5. Seems setup occasionally overwrites drivers and/or Dynamic Link Libraries without prompting. Result: Servers unbootable, must reinstall. It's only for a moment but the problem might lie on the hard ware side — but on the other hand, Bob's Redmond reps "indicated they are aware of the overwriting problem."

SO THIS POLICE department in Ohio did a big system upgrade. Spent over 200 grand. And the chief made sure he got his money's worth by throwing out all the typewriters — which

the cops still used because they refused to learn the previous system. The help desk is swamped and better, thus the 911 call to Sharky. I'm often grateful that my users don't carry arms...

"YOU KNOW," I'm worried about the Y2K problem... That was none other than Bruce Springsteen during one of his recent big New Jersey concerts, as heard by Tankster Ted. Peter de Jager is more confident than Bruce, though — the Y2K cheerleader announced that as the clock rolls over to 2000, he'll be aboard a United Air Lines flight from Chicago to London.

Nobody said capitalism would be pretty. Plat fish told the Tank there's a credit-card scam going on in Belarus, where crooks use phony credit-card numbers to order online from U.S. vendors. The goods are usually delivered before the fraud is found out. Nobody said it would be pretty, either. Got an unsightly vendor? A prospect that just won't close up? A boss whose idea you'd like to kill — with a right cross? E-mail the Tank sharky@computerworld.com.

Something that's already out there will soon blindside us, just as the PC and the Internet did.



The 5th Wave



"This part of the tank tells us whether you're personally fitted to the job of network administrator."



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